



## Final Project Closeout Report

For the

### Building 910 Closure Project

Revision 0

April, 2003

Remediation, Industrial D&D, and Site Services  
Kaiser-Hill company



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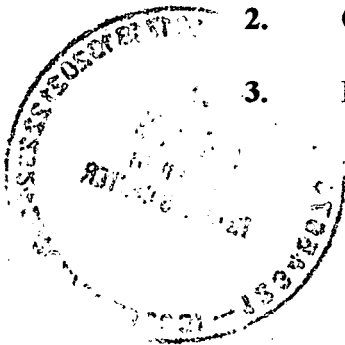
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## **Final Project Closeout Report 910 Closure Project**

### **I. Introduction**

The Building 910 Closure Project was completed in accordance with the RSOP for Facility component Removal, Size Reduction, and Decontamination Activities (DOE 2002c); and the RSOP for Facility Disposition (DOE 2000b). This document summarizes the actions taken and final condition of Building 910.

Building 910 was a two level structure. The upper level consisted of a large process room, an office, an electrical room, and a smaller process room. The lower level consisted of one large, process area. The upper level walls were constructed of 12" concrete block, and the lower level was constructed of 12" thick concrete. The building dimensions were 47'X102'. The first floor walls were 14' high, at top of masonry on the north side, and 12' high, at top of masonry on the south side. Four feet of the lower level walls were above grade, and 15' of wall were below grade. The building was on a pier system, ranging from 15' to 28' deep, and there were three 24" square concrete columns on the lower level, at mid-span of the building. Both floors were poured concrete slabs. The building concrete block walls were reinforced vertically and horizontally. The roof system consisted of twin tees, 8" wide X 20" deep, bearing on top of the concrete block walls at each end. The roof cover was built-up with over 1" thick rigid insulation board on top of 2" perlite. The perlite was on top of the concrete twin tees. The top of the roof was covered with tar and pea gravel. Metal flashing was located at the top of the walls. Inside of the building were 6" concrete block partitions, approximately 120 linear feet, and there was an access floor hatch in the first floor. Metal steps also lead to the first level. There were three man doors and one roll-up door in the exterior walls of the building. There were also exhaust fans and louvers in the exterior walls and conduit and lighting on the exterior walls.

There were related outdoor systems. On the West Side there were three natural gas-fired electrical generators on a concrete pad and related gas systems. On the north side, there was an off-specification distillate line to the solar ponds, an evaporator feed line from the ponds, three self-contained metal cooling towers on a concrete pad, electrical systems, an emergency shower, a chemical storage tank (800 gallon, labeled asbestos-free) on a concrete/steel cradle in concrete secondary containment, and truck overhead dispensing pad/system with concrete secondary containment. On the East Side, there was a metal door and a concrete platform with concrete stairs and metal railing, a transformer platform, a concrete pit, an empty nitric acid storage tank on a concrete/steel cradle in concrete secondary containment, and an empty concrete sludge drying bed. On the south side there were concrete steps to a metal door and a concrete platform/loading dock with a roll-down door, and 4" pipes entering building.

Building 910 was constructed in 1977 to process liquids from the solar evaporation ponds and waters collected from the Interceptor Trench System (ITS). However, the facility was considered too expensive to operate, and systems leaked. Therefore, the treatment systems were shutdown in 1993. Prior to this date, the reverse osmosis treatment systems in the basement treated effluent from the sanitary treatment plant, and the evaporator system in Room 101 treated approximately 300,000 gallons of ITS water. Liquids from the Solar Ponds were never treated in the facility. The building had equipment on both levels (i.e., treatment systems, tanks, process control panels, instrumentation, large quantities of piping and conduit, etc.). Treatment systems and tanks were emptied but were not drained 100%. There was a 20-foot section of waste transfer line in the basement that periodically conveyed Solar Pond and ITS waters to the Building 374 Treatment Facility. The lower level had floor drains. In addition, the building had a fire protection system and lighting, and was connected to the Site Life Safety Disaster Warning (LSDW) System.

Building 910 had no radiological postings on the interior or exterior of the building except for internally contaminated piping and two sand tanks. There were no routine historical or special radiological surveys (total and/or removable available for the interior or exterior of Building 910). There were no radioactive sources in the radioactive source registry for Building 910.

## **II. Action Description**

Fluids were drained from all the systems in Building 910 and disposed in accordance with site procedures leaving the building with only traces of liquids. Following that activity, the Building 910 D&D was completed in two parts. First, loose property removal, some equipment dismantlement, and fluid draining from equipment and piping systems was accomplished by Rocky Flats Closure Site Services (RFCSS). RFCSS is the Facility Management Subcontractor for that area reporting to the Remediation, Industrial D&D, and Site Services (RISS) Department of Kaiser-Hill Company, L.L.C. (KH). The second part, Demolition was also performed by RFCSS through subcontract with TP Enterprises. Project management and oversight were performed by RISS.

In general the D&D work included removal of all equipment systems, building structures, utilities and all other associated structures such as stanchions, concrete driveways, and sidewalks within the Building 910 boundary. All piping and drains fields were removed to a minimum of 4' below grade. Uncontaminated underground sewer lines, drain fields, electrical lines, and phone lines/fiber-optic cables, below four feet were left in place. All contaminated process lines and equipment were removed. All concrete was removed except for foundations, footings, floor slabs and the pier system below four feet below surrounding grade. In summary, the project consisted of asbestos abatement, decontamination, dismantling of systems and equipment, pre-demolition surveys, facility demolition, hazardous waste segregation, waste packaging and disposal, backfill, site grading and site restoration.

## **III. Verification That Action Goals Were Met**

Five action objectives were established for the Building 910 Removal Project prior to beginning the demolition:

- *Decontamination of the facilities (as necessary) to support release for decommissioning per site approved procedures.*

The facilities were decontaminated to free-release standards and placed in the off-site landfill or on-site rubble pile. It was not possible to decontaminate some of the components, i.e. two sand filter tanks and 200' of 3" OD process piping. Therefore, these components were disposed of as LLW.

- *Decommissioning Building 910 in accordance with RFCA and applicable or relevant and appropriate requirements.*

RFCA and other relevant requirements were complied with throughout the project.

- *Complete decontamination and decommissioning activities in a manner that is protective of site workers, the public and the environment.*

Decontamination and decommissioning activities were completed within regulatory requirements. Some examples include: use of glove bags to contain asbestos cuts to control asbestos migration; as well as, utilizing wet methods, via fire hydrant and hoses, to control dust during demolition.



- *Demolish Building 910 Facility structure, utilities and process lines to 4' below grade.*

All concrete from Building 910 was removed to a minimum of 4' below surrounding grade.

All utilities were removed to a minimum of 4' below surrounding grade.

- *Backfill subsurface structures with clean fill and coordinate with Environmental Restoration for characterization of building slabs and concrete sampling and analysis of native soils under the former building slabs and reclamation of the site by re-contouring and revegetation.*

With approval of Environmental Restoration, DOE and CDPHE all dirt was left on site. Dirt on the site was below the Tier II action level and allowed to be put back in the excavations. Backfill and topsoil were also imported from off-site and installed/placed.

#### IV. Verification of Treatment Process

Not applicable to this project.

#### V. Radiological Analysis

See Appendix 3 of this document containing the following Pre-Demolition Survey Reports (PDSR):

- Building 910 Closure Project, Revision 0, dated November 15, 2002

#### VI. Demolition Survey Results

N/A (There were no requirements for air monitoring during demolition of this facility)

#### VII. Waste Stream Disposition

<b><u>Sanitary Disposal</u></b>	
Disposal Site:	Construction Debris
Waste Volume (m <sup>3</sup> ):	Front Range Landfill, 1830 Weld County Road 5, Erie, CO
Waste Weight (tons):	2440 m <sup>3</sup>
Additional Information:	1,056 Tons
	Above Grade Building Debris
<b><u>Hazardous Disposal</u></b>	
Disposal Site:	Kettleman Hills Facility, Kettleman City, CA or Bethlehem Apparatus Co. Hellertown, PA
Waste Volume (m <sup>3</sup> ):	Minor amounts
Additional Information:	Electronic Circuit Boards, Thermostats, exit signs, batteries, fluorescent light bulbs and any other RCRA hazardous components were removed and taken to the RFCA temporary unit for combination with like waste streams for disposal.
<b><u>TSCA Waste Disposal</u></b>	
Disposal Site:	BFI Landfill, 88 <sup>th</sup> & Tower Road, Commerce City, CO
Waste Volume (m <sup>3</sup> ):	Approximately 1 m <sup>3</sup>
Additional Information:	PCB ballast's were removed and taken to the RFCA temporary unit for combination with like waste streams for disposal. Ballasts were disposed of as PCB Bulk Product Waste.
<b><u>Asbestos Waste Disposal</u></b>	
Disposal Site:	BMI Landfill, 88 <sup>th</sup> & Tower Road, Commerce City, CO
Waste Volume (m <sup>3</sup> ):	4.1 m <sup>3</sup>

<b>Additional Information:</b>	Non-friable asbestos removal resulted in 30 Big Bags = $5.3 \text{ yds}^3 = 144.64 \text{ ft}^3 = 4.1 \text{ m}^3$
<b>Low-Level Waste Disposal</b>	
<b>Disposal Site:</b>	Nevada Test Site
<b>Waste Volume (<math>\text{m}^3</math>):</b>	14.75 $\text{m}^3$
<b>Additional Information:</b>	200' of 3" OD pipe were removed and loaded into a Strong Tight Cargo Container for disposal. 2 each sand filter tanks each 6' OD x 8' 6" high were removed, loaded onto platforms and Instacoted to form a Strong Tight Container for disposal.
<b>Low-Level Mixed Waste Disposal</b>	
<b>Disposal Site:</b>	N/A
<b>Waste Volume (<math>\text{m}^3</math>):</b>	N/A
<b>Additional Information:</b>	N/A
<b>Recycled Material</b>	
<b>Recycle Facility:</b>	Concrete Rocky Flats Environmental Technology Site Concrete Pile at former Building 850 Site
<b>Waste Volume (<math>\text{m}^3</math>):</b>	N/A Tonnage Reported ( $\sim @ 150 \text{ #/FT}^3 = 124 \text{ YDS}^3 = 94.8 \text{ m}^3$ )
<b>Additional Information:</b>	250 Tons Reported
<b>Property Disposition</b>	
<b>Receiver Locations (major items only):</b>	3 each Natural Gas-fired Electric Generators Kaiser-Hill Company, L.L.C., Golden, CO
<b>Volume (<math>\text{m}^3</math>):</b>	N/A
<b>Weight (tons):</b>	N/A
<b>Additional Information:</b>	Sold Through PU&D

#### VIII. Deviations From the Decision Document

Not applicable to this project.

#### IX. Description of Site Condition at End of Decommissioning

All above ground buildings and other structures, concrete pads, roadways and walkways, overhead steam lines, condensate lines, air lines, alarm lines, and electrical lines along with supporting stanchions and power poles have been removed. The site was filled and graded to prevent ponding with 5" to 6" of topsoil. The site will be planted with native grasses in the spring.

#### X. Dates and Duration's of Project Activities

ACTIVITIES	START DATE	END DATE	DURATION
B910 Planning & Engineering	8/12/02	2/11/03	114 Work Days
B910 Characterization	9/4/01	9/13/01	8 Work Days
B910 Dismantlement	8/12/02	10/4/02	41 Work Days
B910 Decontamination	11/14/02	11/14/02	1 Work Day
B910 Final Surveys (PDS)	10/24/02	12/5/02	25 Work Days
B910 Demolition & Disposal	10/1/02	12/31/02	56 Work Days

#### XI. Final Disposition of Wastes

See Section VII.

#### XII. Next Steps for Building 910

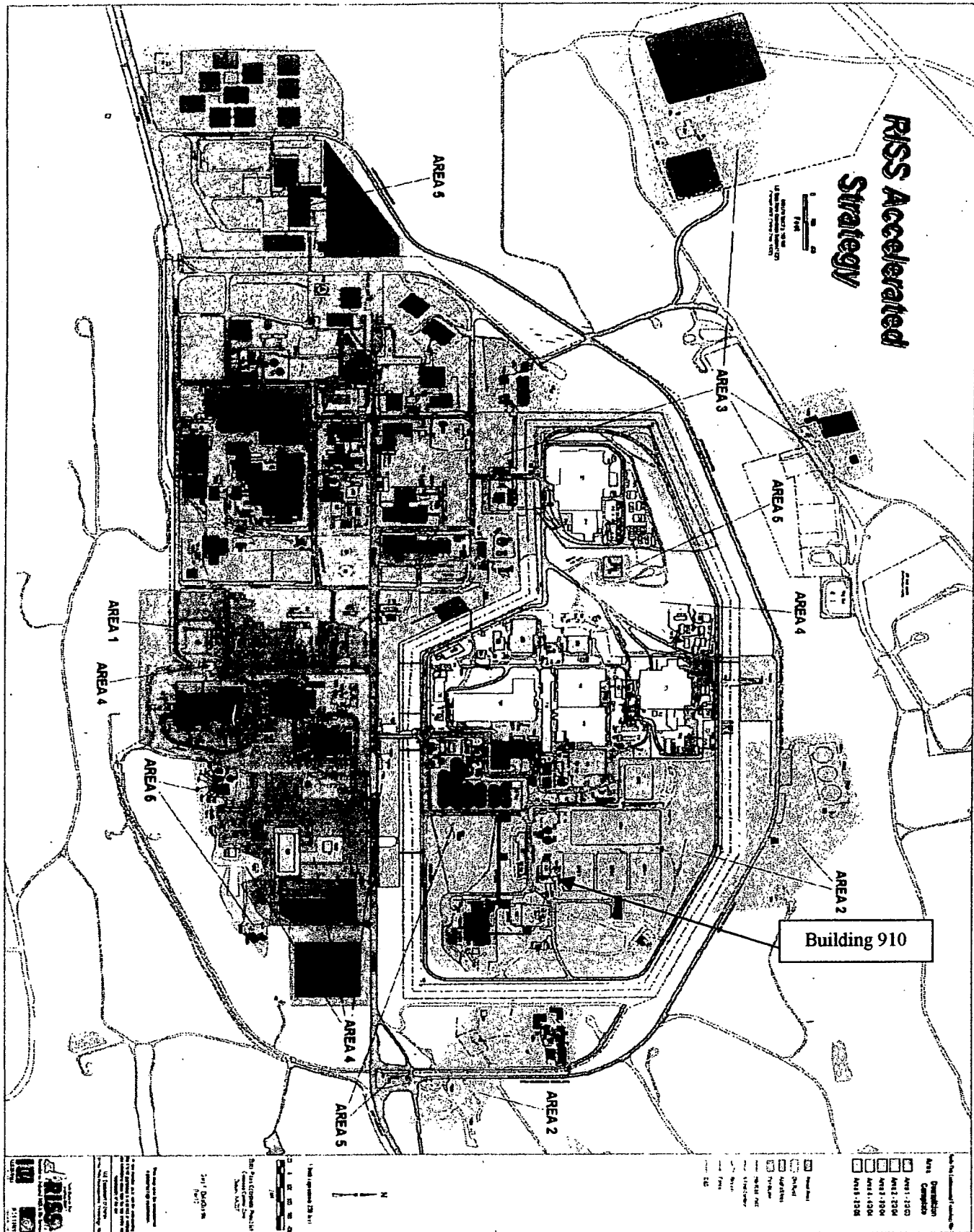
D&D of B-910 is Complete.



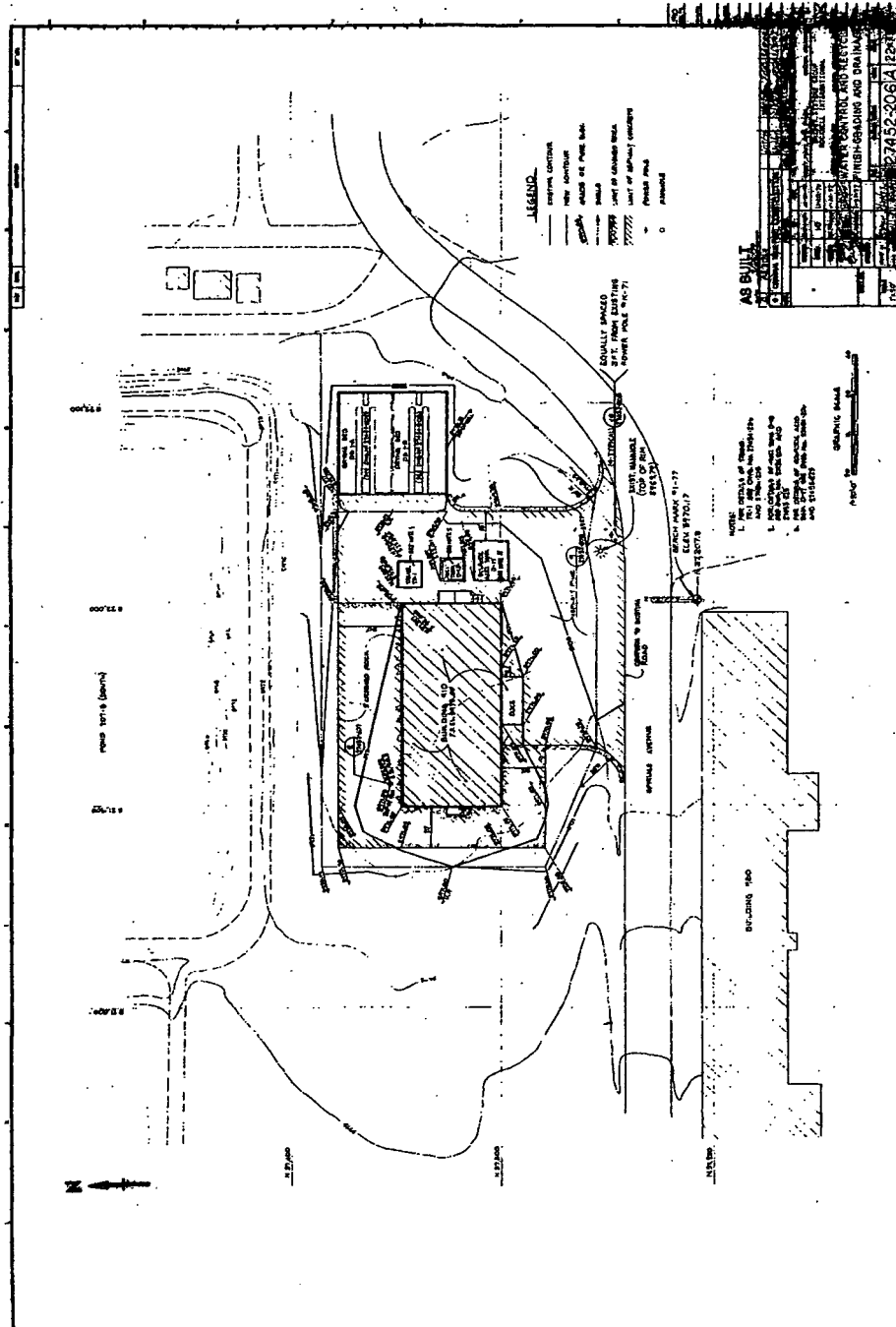
## **Appendix 1**

**Article 1     RFETS Area Plot Plan**

**Article 2     Building 910 Plot Plan**



Final Project Closeout Report  
 Building 910 Closure Project  
 Appendix 1, Article 2





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## **Appendix 2**

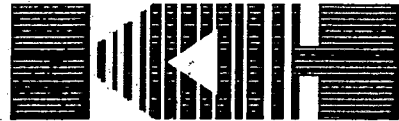
**No Contact Records Were Generated During D&D of B-910**



## **Appendix 3**

### **Pre-Demolition Survey Report (PDSR)**

Article 1    Pre-Demolition survey Report (PDSR), Building  
                 910 Closure Project, Revision 0, Dated November  
                 15, 2002



# **Rocky Flats Environmental Technology Site**

## **PRE-DEMOLITION SURVEY REPORT (PDSR)**

### **BUILDING 910 CLOSURE PROJECT**

**REVISION 0**

**November 15, 2002**

**CLASSIFICATION REVIEW NOT REQUIRED PER  
EXEMPTION NUMBER CEX-005-02**



# PRE-DEMOLITION SURVEY REPORT (PDSR)

## BUILDING 910 CLOSURE PROJECT

REVISION 0

November 15, 2002

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## ATTACHMENTS

- A Facility Location Map
- B Radiological Data Summaries and Survey Maps
- C Chemical Data Summaries and Sample Maps
- D Data Quality Assessment (DQA) Detail

## ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
DCGL <sub>EMC</sub>	Derived Concentration Guideline Level – elevated measurement comparison
DCGL <sub>w</sub>	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

## EXECUTIVE SUMMARY

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 910. Because this Type 2 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS included the walls, ceilings, and roofs. Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

The PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report for the Group A facilities.

Results indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits, except for two sand-filter tanks in the basement of B910. The sand filter tanks have been drained of liquids, are radiologically clean on the outside but contain very low levels of residual transuranic and uranium contamination on the inside. The two sand-filter tanks were sealed and will be removed and packaged as radioactive waste during the demolition of the building. Building 910 was initially proposed to be a RCRA Unit, however, RCRA waste was never introduced into the facility, and a permitted unit was never established. In the RLCR, building materials suspected of containing non-friable asbestos were "None Detected", however, friable, asbestos-containing material (5% to 8% Chrysotile) was identified in the vapor barrier mastic coating on the thermal systems insulation. Prior to demolition, the asbestos containing material will be removed in accordance with Colorado Department of Public Health and Environment (CDPHE) Regulation 8. All beryllium results obtained during the PDS were below the investigative level of  $0.1 \mu\text{g}/100\text{cm}^2$ . Any potentially PCB-containing fluorescent light ballast and hazardous waste items (e.g., mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries) were previously removed from the building and therefore, do not impact decontamination and decommissioning activities.

Based upon the PDSR, the Building 910 structure can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and that PDS data remain valid, isolation controls have been established, and the area has been posted accordingly.

## **1 INTRODUCTION**

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 910. Because this Type 2 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as a part of this PDS included walls, ceilings and roofs. Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Building 910. The location of this facility is shown in Attachment A, Facility Location Map. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 2 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Building 910. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report for the Group A facilities, dated October 14, 1999, Revision 0.

### **1.1 Purpose**

The purpose of this report is to communicate and document the results of the Building 910 PDS effort. A PDS is performed prior to building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

### **1.2 Scope**

This report presents the final radiological and chemical conditions of Building 910. Environmental media beneath and surrounding the facilities are not within the scope of this PDSR and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

### **1.3 Data Quality Objectives**

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

### **B910 Interior (Survey Unit 910-A-002)**

The interior was classified as a MARSSIM Class 3 Survey Unit. Prior to the PDS, a process waste line that passed through the north wall of B910 basement was removed. Also, piping associated with two sand filters located in the east end of the basement was removed. The two sand filters were sealed and will be removed and packaged as radioactive waste during the demolition of the building. The sand-filter tanks have been drained of liquids, are radiologically clean on the outside and contain very low levels of residual transuranic and uranium contamination on the inside (2.284 pCi/gram total activity). Remaining tanks and equipment were released through the Property Waste Release Evaluation (PWRE) process. All equipment and tank PWRE survey results (including both interior and exterior surfaces) were less than the applicable DCGL values; PWRE surveys are included in Attachment B, Radiological Data Summary and Survey Maps.

A total of 33 TSA measurements (16 random grid, and 15 biased and 2 QC) and 31 RSA measurements (16 random grid and 15 biased) were taken and scan surveys performed. Alpha scan surveys of 5% of interior surfaces (155 m<sup>2</sup> minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, Radiological Data Summary and Survey Maps.

### **B910 Exterior (Survey Unit 910-B-001)**

The B910 exterior was classified as a MARSSIM Class 2 Survey Unit. A total of 32 TSA measurements (15 random, 15 biased, and 2 QC) and 30 RSA measurements (15 random and 15 biased) were taken. Alpha scan surveys of 100% of the north wall (167 m<sup>2</sup> minimum) and 50% of the remaining exterior surfaces (764 m<sup>2</sup> minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Soil inside the Drying Beds (228A and 228B) east of B910 was evaluated for potential contaminants. Based on process history, past operational use (i.e., no process liquids discharged in to the basins), and surrounding soil levels, the soil inside the Drying Beds was determined to be characteristic of surrounding soils outside the Drying Beds (i.e., less than Tier II levels). Thus, the Drying Bed concrete is acceptable for demolition and disposal as clean material or onsite recycle material. The exterior surfaces of B910 are acceptable for unrestricted release. Refer to Attachment B, Radiological Data Summary and Survey Maps, for survey data, statistical analysis results, survey locations and radiological scan maps.

#### **4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]**

Building 910 was initially proposed as a RCRA Unit. However, the RCRA permit was never established and RCRA wastes were not introduced into the facility. During component removal activities, samples were taken from the sand filters and analyzed for RCRA metals. The results of these samples did not indicate the presence of any RCRA contaminants. The results of these samples are included in Attachment C, Chemical Data Summaries and Sample Maps - Metals Case Narrative for Kaiser Hill, RIN02S0203. Additionally, a significant amount of paint from the basement floor has peeled due to frequent groundwater infiltration. The D&D contractor's Industrial Hygiene personnel performed field sampling of the paint using an XRF machine and determined that the paint did not contain lead. A visual inspection of the empty building by RISS Environmental Compliance personnel verified the absence of hazardous waste stains and/or residuals on the walls, interior surface of the roof and concrete pad. Therefore, RCRA/CERCLA contamination is not a concern, and samples were not taken as part of this PDS.

The building may have contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, and lead-acid batteries. However, these items have been removed and are being managed in accordance with the Colorado Hazardous Waste Act.

#### **4.4 Polychlorinated Biphenyls (PCBs)**

Based on the HSAR for the Group A facilities, interviews, facility walkdowns and a review of historical WSRIC processes, Building 910 does not have a history of PCB use or storage. The facility may have contained PCB fluorescent light ballast, however, all PCB ballast have been removed from the facility and will not impact decontamination and decommissioning activities.

Based on the age of B910, paints used on the facility may contain PCBs; and therefore, painted surfaces will be managed as PCB Bulk Product Waste. Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K. Clough, US EPA Region 8, to J. Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-Based Painted Concrete).

### **5 PHYSICAL HAZARDS**

Physical hazards associated with Building 910 consists of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. Building 910 contains a full-length basement plus an additional six foot deep (approximate) sump pit located in the southeast corner of the basement. Two sand filter tanks located in the basement will be removed as low-level radioactive waste during demolition. There is a chemical sump pit located on the eastside of Building 910 that is approximately eight feet deep. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, and therefore, does not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

## **8 FACILITY CLASSIFICATION AND CONCLUSIONS**

Based on the analysis of radiological, chemical and physical hazards, Building 910 is classified as an RFCA Type 2 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). PDS results indicated that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits except for two sand-filter tanks in the basement of B910. The sand-filter tanks have been drained of liquids, are radiologically clean on the outside but contain very low levels of residual transuranic and uranium contamination on the inside. The two sand-filter tanks were sealed and will be removed and packaged as radioactive waste during the demolition of the building. PCB ballast and hazardous waste items have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations.

The PDS for Building 910 was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Environmental media beneath and surrounding the facilities will be addressed at a future date in accordance with the Soil Disturbance Permit process and in compliance with RFCA. To ensure that Building 910 remains free of contamination and that PDS data remain valid, isolation controls have been established, and the facilities are posted accordingly.










# ATTACHMENT A

## Facility Location Map

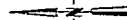
# Area 2 Building 910

## Standard Map Features

-  Buildings and other structures
-  Solar Evaporation Ponds (SEPs)
-  Lakes and ponds
-  Streams, ditches, or other drainage features
-  Fences and other barriers
-  Paved roads
-  Dirt roads

### DATA SOURCE BASE FEATURES:

Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs, 1995



Scale = 1 : 12450  
1 inch represents approximately 1038 feet  
0 50 100 feet  
State Plane Coordinates Projection  
Colorado Central Zone  
Datum: NAD27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:

**DynCorp**  
THE ART OF TECHNOLOGY

Prepared for:



NOVEMBER 14, 2001

MAP ID: FY 2003

## ATTACHMENT B

# Radiological Data Summaries and Survey Maps

**SURVEY UNIT 910-A-002**  
**RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: B910 (Interior)**

910-A-002  
PDS Data Summary

**Total Surface Activity Measurements**

	30	31
	Number Required	Number Obtained
MIN	-6.5	dpm/100 cm <sup>2</sup>
MAX	48.2	dpm/100 cm <sup>2</sup>
MEAN	13.0	dpm/100 cm <sup>2</sup>
STD DEV	13.5	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>

**Removable Activity Measurements**

	30	31
	Number Required	Number Obtained
MIN	-1.2	dpm/100 cm <sup>2</sup>
MAX	6.7	dpm/100 cm <sup>2</sup>
MEAN	-0.1	dpm/100 cm <sup>2</sup>
STD DEV	1.5	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

**SURVEY UNIT 910-A-002  
TSA - DATA SUMMARY**

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	3	7	9	10
Serial #:	394	394	2344	2344	3125	1366
Cal Due Date:	1/12/03	1/12/03	1/17/03	1/17/03	4/21/03	4/30/03
Analysis Date:	11/4/02	11/4/02	11/4/02	11/5/02	11/7/02	11/7/02
Alpha Eff. (c/d):	0.225	0.225	0.220	0.220	0.213	0.194
Alpha Bkgd (cpm)	1.0	1.0	1.0	0.7	2.0	1.3
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1,2</sup>
1	1	10	44.4	7.3	32.4	29.1
2	1	2	8.9	2	8.9	-6.5
3	3	14	63.6	4	18.2	48.2
4	7	6	27.3	2	9.1	11.9
5	1	10.7	47.6	6	26.7	32.2
6	9	11.3	53.1	4	18.8	37.7
7	9	4	18.8	4	18.8	3.4
8	10	6.7	34.5	4.7	24.2	19.1
9	7	2	9.1	0.7	3.2	-6.3
10	7	2.7	12.3	2	9.1	-3.1
11	9	8	37.6	0.7	3.3	22.2
12	1	5	22.2	6	26.7	6.8
13	3	3.3	15.0	3.3	15.0	-0.4
14	7	5.3	24.1	3.3	15.0	8.7
15	10	5.3	27.3	4.7	24.2	11.9
16	1	9.3	41.3	5.3	23.6	25.9
17	1	8.7	38.7	2.7	12.0	23.3
18	1	5.3	23.6	3.3	14.7	8.2
19	1	6	26.7	6	26.7	11.3
20	9	6.7	31.5	2.7	12.7	16.1
21	9	6.7	31.5	4.3	20.2	16.1
22	9	8	37.6	4	18.8	22.2
23	9	6.7	31.5	2	9.4	16.1
24	9	8	37.6	4	18.8	22.2
25	9	2.7	12.7	1.3	6.1	-2.7
26	9	2.7	12.7	3.3	15.5	-2.7
27	9	6.7	31.5	2.7	12.7	16.1
28	9	5.3	24.9	2.7	12.7	9.5
29	9	2	9.4	2	9.4	-6.0
30	9	3.3	15.5	1.3	6.1	0.1
12A(under carpet)	1	6	26.7	1	4.4	11.3

1 - Average LAB used to subtract from Gross Sample Activity

15.4	Sample LAB Average
MIN	-6.5
MAX	48.2
MEAN	13.0
SD	13.5
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

5 QC	10	3.3	17.0	1.3	6.7	6.7
16 QC	10	6.7	34.5	2.7	13.9	24.2

1 - Average QC LAB used to subtract from Gross Sample Activity

10.3	QC LAB Average
MIN	6.7
MAX	24.2
MEAN	15.5
Transuranic DCGL <sub>w</sub>	100

**SURVEY UNIT 910-A-002  
RSC - DATA SUMMARY**

<b>Manufacturer:</b>	Eberline	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	5	6	11	12
<b>Serial #:</b>	959	963	833	963
<b>Cal Due Date:</b>	1/18/03	1/3/03	2/28/03	1/3/03
<b>Analysis Date:</b>	11/4/02	11/4/02	11/7/02	11/7/02
<b>Alpha Eff. (c/d):</b>	0.33	0.33	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.3	0.3	0.4	0.1
<b>Sample Time (min)</b>	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	5	0	-0.9
2	6	1	0.6
3	5	1	0.6
4	12	1	1.2
5	6	0	-0.9
6	12	1	1.2
7	11	0	-1.2
8	11	0	-1.2
9	13	0	0.0
10	11	0	-1.2
11	13	0	0.0
12	6	0	-0.9
13	5	0	-0.9
14	11	0	-1.2
15	12	0	-0.3
16	5	5	6.7
17	6	0	-0.9
18	5	0	-0.9
19	6	0	-0.9
20	11	0	-1.2
21	13	0	0.0
22	11	0	-1.2
23	12	0	-0.3
24	13	0	0.0
25	11	0	-1.2
26	11	1	0.3
27	12	1	1.2
28	13	0	0.0
29	13	1	1.5
30	12	0	-0.3
12A (under carpet)	5	0	-0.9
		MIN	-1.2
		MAX	6.7
		MEAN	-0.1
		SD	1.5
		Transuranic DCGL <sub>w</sub>	20

# PRE-DEMOLITION SURVEY FOR B910

Survey Area: 2

Survey Unit: 910-A-002

Classification: 3

Building: 910

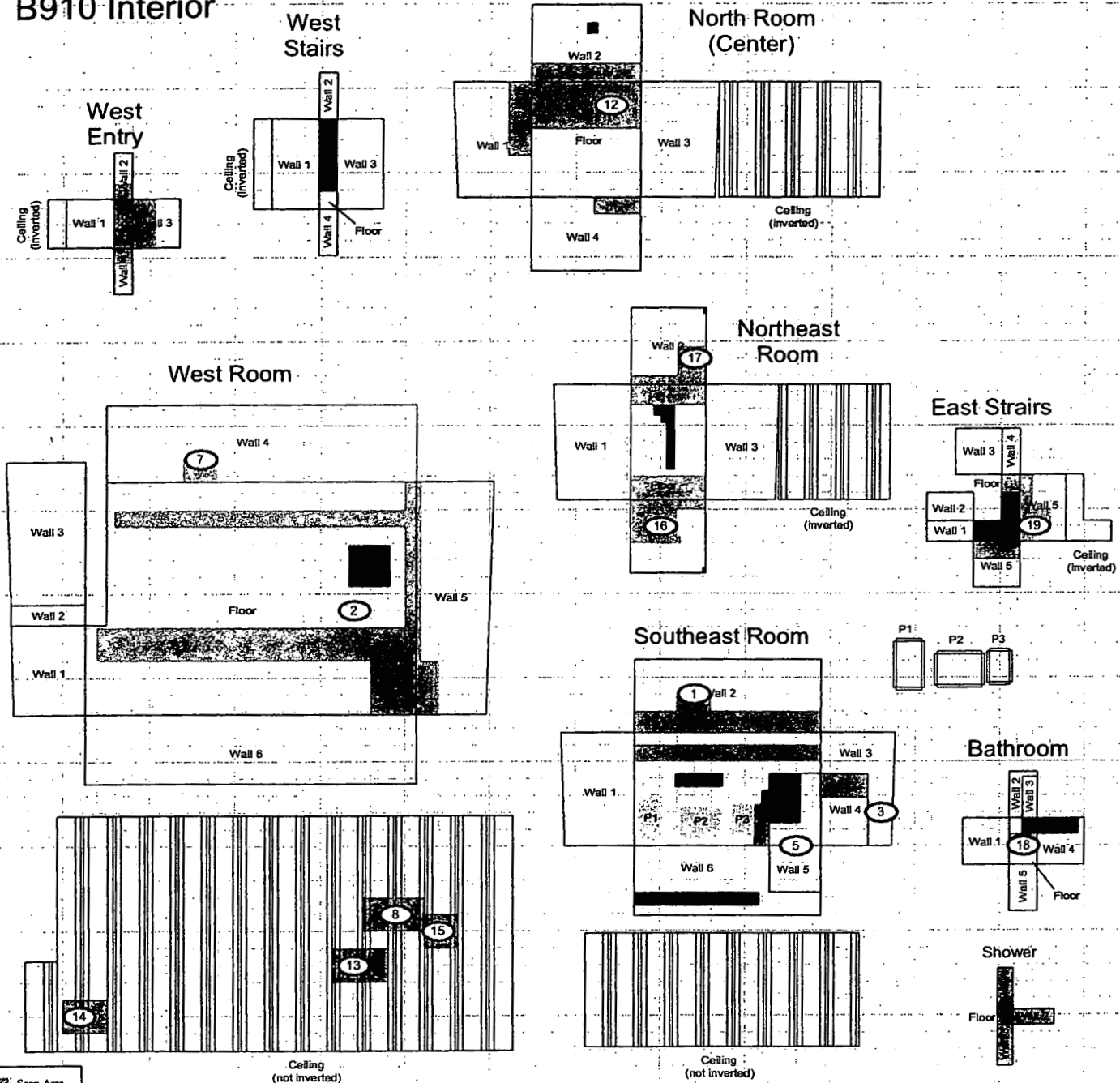
Survey Unit Description: Interior

Total Area: 3087 sq. m.

Total Floor Area: 856 sq. m.

PAGE 1 OF 2

## B910 Interior



### SURVEY MAP LEGEND

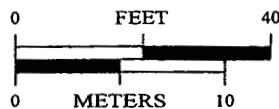
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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### Scan Survey Information

Survey Instrument ID #(s) & RCT ID #(s):  
8, 9, 10



1 inch = 30 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**  
THE ART OF TECHNOLOGY



MAP ID: 03-0046/B910-IN1-SC

Nov 12, 2002



# PRE-DEMOLITION SURVEY FOR B910

Survey Area: 2

Survey Unit: 910-A-002

Classification: 3

Building: 910

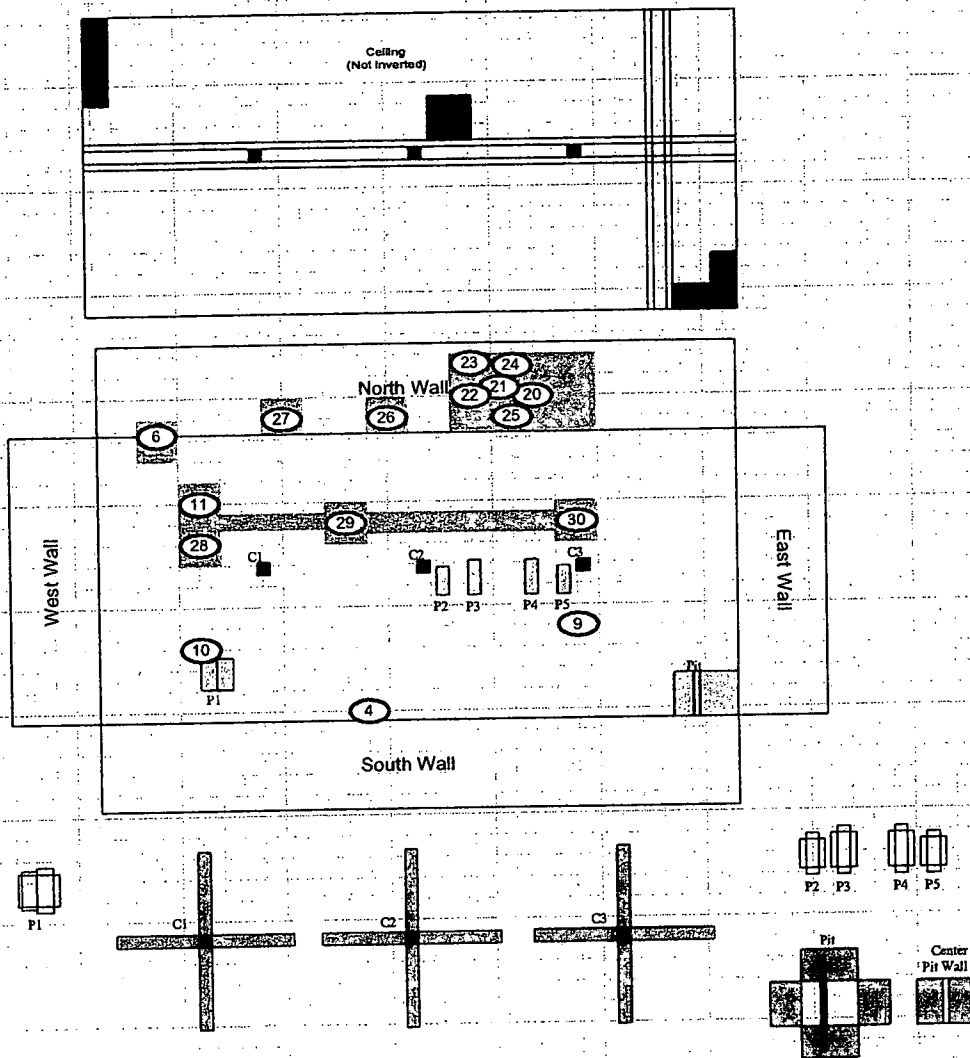
Survey Unit Description: Interior

Total Area: 3087 sq. m.

Total Floor Area: 856 sq. m.

PAGE 2 OF 2

## B910 Basement



Scan Area

### SURVEY MAP LEGEND

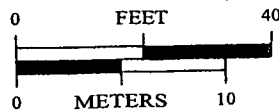
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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### Scan Survey Information

Survey Instrument ID #(s) & RCT ID #(s):  
8, 9, 10



1 inch = 30 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**  
THE ART OF TECHNOLOGY



MAP ID: 03-0046/B910-IN2-SC

Nov. 12, 2002

☒ Property

☐ Waste

☐ Sample

## RELEASE EVALUATION FORM

Page 1 of 15Release Evaluation No.: 021101-00883-003 EXTENDED: No EXPIRES: N/A Charge No.: N/A

## PART I

## SENDER/CUSTODIAN ACKNOWLEDGEMENT

## Description of Property/Waste/Sample To Be Released/Transferred:

Building 910 – All re-sale items removed from B910 including pumps, motors, stainless steel valves, air compressors, and associated components produced during the removal of these items.

NOTE: This release evaluation does not pertain to the Sand Filter Tanks.

Current Location: B910

Destination: RFETS, PU & D (Dick Link, x4220 - RE Point-of-Contact)

New Recipient/Custodian: Same as above

## History/Process Knowledge:


The materials described in this release evaluation were never used for the intended purpose. Building 910 was constructed to process and treated the liquid waste from the RFETS Solar Ponds. However, Solar Pond water was never processed and the systems in B910 were never used for the intended purpose. A test run was performed on the system, after which the system was shut-down and never used again.

Pre-job surveys performed prior to the generation of this release evaluation show no presence of DOE controlled radioactive materials.

Therefore, there is a very low potential for DOE controlled radioactive materials to be present on this equipment and materials.

Has the specified material ever been in an RBA/CA or contacted DOE controlled radioactive materials? NO

- 1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate.
- 2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation.

Sender/Custodian: Emp. No. Date: 11 Nov 02Ext: 6436

Property

Waste

Sample

**RELEASE EVALUATION FORM**Page 2 of 15Release Evaluation No.: 021101-00883-003 EXTENDED: No EXPIRES: N/A Charge No.: N/A**PART II RADIOLOGICAL ENGINEERING****SPECIFIC REQUIREMENTS AND/OR COMMENTS:****SURVEYS REQUIRED**

The B910 system and associated material have met all of the requirements for potential unrestricted release from radiological controls.

Historical assessment information on B910 present a limited concern for this material to contain or be contaminated with DOE controlled radioactive materials. Detailed sampling and surveys SHALL performed on this equipment.

- Custodian, retain a copy of all documents required by this release evaluation. The sender/custodian will be responsible for ensuring a copy of this release evaluation is available for auditing/due diligence purposes.

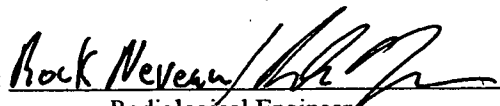
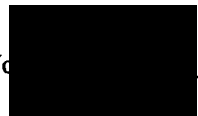
WHEN LINES OR PIPING ARE REMOVED, PROJECT SHALL REMOVE EACH SECTION OF LINE AND PLACE ONTO FLOOR IN A MANNER AS TO PROVIDE EVENTUAL ACCESS TO RCT FOR SURVEYS TO BE PERFORMED. For example, the lines should not be piled into a jumbled mess that would prevent the technician from gaining safe access to all areas of the lines; lines should be placed onto ground in as organized a manner as practical.

1. **HEAT EXCHANGERS, VACUUM CHAMBERS, & MEMS UNITS:** RCT, perform a 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on the interior surfaces of each unit. ALSO, obtain additional investigative surveys based on initial results at the discretion of the RCT.
2. **TANKS, FILTRATION CHAMBERS:** RCT, perform 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on areas of collection, tank outlets, and other areas that show a potential for accumulating material during process.
3. **FEED & DRAIN PIPING SURVEYS:** RCT, perform a 10% scan of all accessible surfaces of the piping. Obtain ten (10) fixed activity measurements AND ten (10) removable activity measurements on the interior surfaces of the piping.

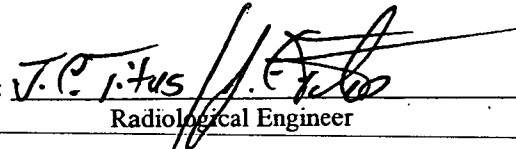

(NOTE, piping diameter should be large enough to place an NE Electra probe inside the pipe. Contact Radiological Engineering R. Neveau, x3461 if this assumption is not true).

RCT shall use professional judgement on the need to obtain any additional fixed activity measurements based on results of field measurements.

**Forward all surveys to Radiological Engineering for final review prior to placing any items or objects associated with this D&D activity into its final shipping waste container.**

Evaluated: Rock Neveau  Emp. No.  Date: 11-01-02 Ext: 3461  
Radiological Engineer

**APPROVAL FOR TRANSFER/SHIPMENT**

Approved: J.P. Fatus  Emp. No.  Date: 11/11/02 Ext: 5825  
Radiological Engineer

**PROPERTY/WASTE RELEASE EVALUATION SIGNATURE REQUIREMENTS**Release Evaluation #: 021101-00883-003Page ~~4~~ of 15<sup>3</sup>  
Q.N.**Release Evaluation for Waste:**

A Release Evaluation for Waste requires an evaluation and unrestricted release approval signature. The evaluation signature is by the Radiological Engineer (RE) providing the methods or criteria for unrestricted release (i.e., survey requirements, analytical requirements, no survey required, etc.). The unrestricted release approval signature for a Release Evaluation for Waste shall be a RE authorized to provide unrestricted release approval. In addition, the evaluation and unrestricted release approval signatures shall not be the same RE. The intent of this provision is to provide peer review of the evaluation and method of unrestricted release. It is important the RE take the peer review process seriously and not become a "rubber stamp" for their fellow engineer.

**Release Evaluation for Property:**

A Release Evaluation for Property requires an evaluation and unrestricted release approval signature. For a Release Evaluation for Property, the evaluation and unrestricted release signature may be the same RE. In the past, only one signature was required for property for which a RE could provide an unrestricted release on the basis of process knowledge/history.

**Release Evaluation for Samples:**

Samples are any waste or material that is being shipped to an off-site facility for analysis. Samples that may be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques may be authorized for shipment to an off-site facility using the signatory requirements specified for property. Samples which cannot be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques shall be authorized for shipment from the Site using the methodology specified for waste, i.e., second signature being provided by a RE authorized to perform peer review and approval for shipment.

The approval for transfer/shipment section of a Sample Release Evaluation (SRE) shall be revised as noted below for samples which cannot be provide with an unrestricted release.

*"The samples specified in Part 1 of this release evaluation are being provided with authorization for transport as non-radioactive materials in accordance with Department of Transportation (49 CFR) regulation. This authorization for shipment does not constitute an unrestricted release."*

**Additional Documentation:**

Number of lines per section may be modified or additional pages attached to ensure adequate documentation of information necessary to perform release evaluation.

Additional pages or attachments to a release evaluation shall have the evaluation number, Page     of    , initials of Radiological Engineer signing approval for transfer/shipment and date.

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2316
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	12/11/02
Bkg.	0.2 cpm	Bkg.	35 cpm	Bkg.	A-1.0 B-768(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-200 B-307
MDA	20 dpm	MDA	200 dpm	MDA	A-37 B-429(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type:

Contamination

COPY


Building: 910

Location: First Floor Valve and piping

Purpose: Job coverage

RWP #: 02-883-0009

Date: 11/01/02 Time: 1100

RCT: B. Jestes / *B. Jestes* / 

Print name Signature Emp. #

RCT: N/A / N/A / N/A

Print name Signature Emp. #

PRE/REN #: N/A 02/10/01-00553-003

Comments: Isotope of concern: Pu

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
2	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
3	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
4	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
5	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
6	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
7	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
8	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
9	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
10	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-4-02 RS Supervision: J. Helms

Print Name

Signature

PRO-164-RSP-07.01 (effective 7/12/01)

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE**

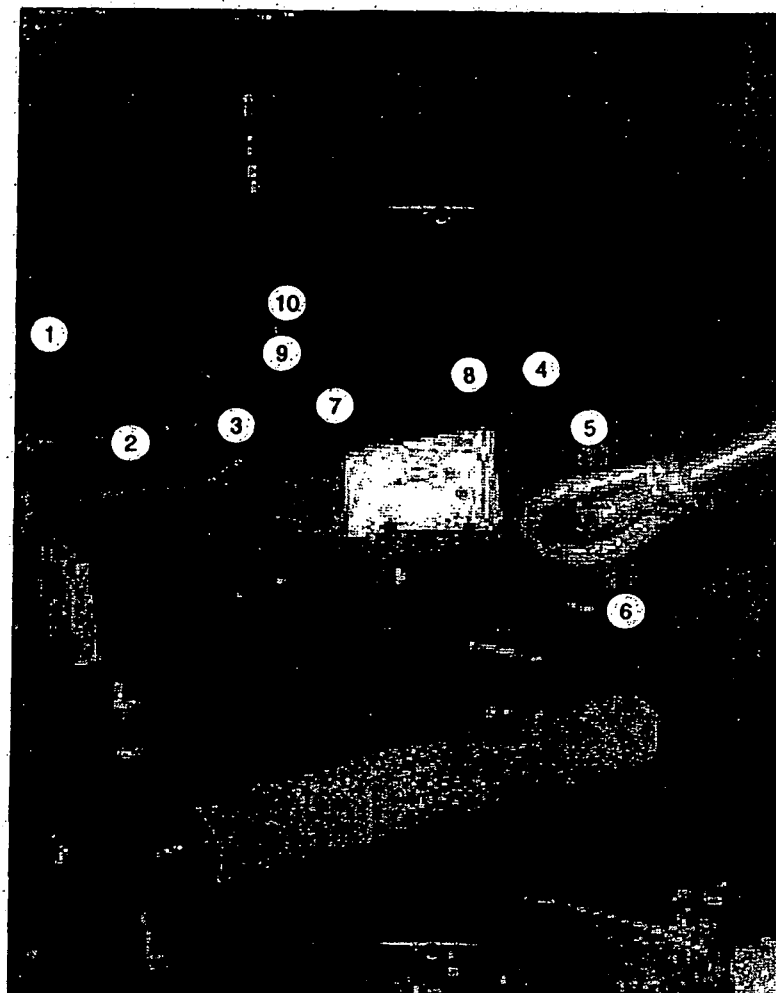
**RADIOLOGICAL SAFETY**

Drawing Showing Survey Points

COPY

PRE# 021101-00863-003

p. 5 of 15



Best Available Copy

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg. Eberline	Mfg. Eberline	Mfg. Ne-Tech
Model SAC-4	Model BC-4	Model Electra
Serial# 1156	Serial# 773	Serial# 2319
Cal Due 1/13/03	Cal Due 9/18/03	Cal Due 1/10/03
Bkg. 0.0 cpm	Bkg. 38 cpm	Bkg. A-4.0 B-846(cpm)
Efficiency 33 %	Efficiency 25%	Efficiency A-232 B-333
MDA 20 dpm	MDA 200 dpm	MDA A-52 B-415(dpm)

Mfg. N/A	Mfg. N/A	Mfg. N/A
Model	Model	Model
Serial#	Serial#	Serial#
Cal Due	Cal Due	Cal Due
Bkg.	Bkg.	Bkg.
Efficiency	Efficiency	Efficiency
MDA N/A	MDA N/A	MDA N/A

Survey Type:

Contamination

COPY

Building: 910

Location: 2" pipe removal

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/31/02 Time: 1600

RCT: B. Jestes / *[Signature]* / [Redacted]

Print name Signature Emp. #

RCT: N/A / N/A / N/A

Print name Signature Emp. #

PRE/REN #: N/A 021101-00883-003

Comments: Isotope of concern: Pu

Removal of 2" S.S. piping in basement

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
2	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
3	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
4	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
5	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
6	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
7	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
8	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
9	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
10	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
11	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
12	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
13	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
14	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
15	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-4-02 RS Supervision: J. Helms

Print Name

Signature

Emp. #

PRO-164-RSP-07.01 (effective 7/12/01)

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	772	Serial#	2314
Cal Due	1/13/03	Cal Due	6/19/03	Cal Due	4/8/03
Bkg.	0.2 cpm	Bkg.	33 cpm	Bkg.	A-5.0 B-862(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.231 B-.320
MDA	20 dpm	MDA	200 dpm	MDA	A-.57 B-435(dpm)

Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A


Survey Type: Contamination

COPY

Building: 910  
 Location: Basement Tanks  
 Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/30/02 Time: 1530

RCT: B. Jestes / *B. Jestes* /   
 Print name Signature Emp. #

RCT: N/A / N/A / N/A  
 Print name Signature Emp. #

PRE/REN #: N/A 021101-0883-003 p.7 of —  
 Comments: Isotope of concern: Pu

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

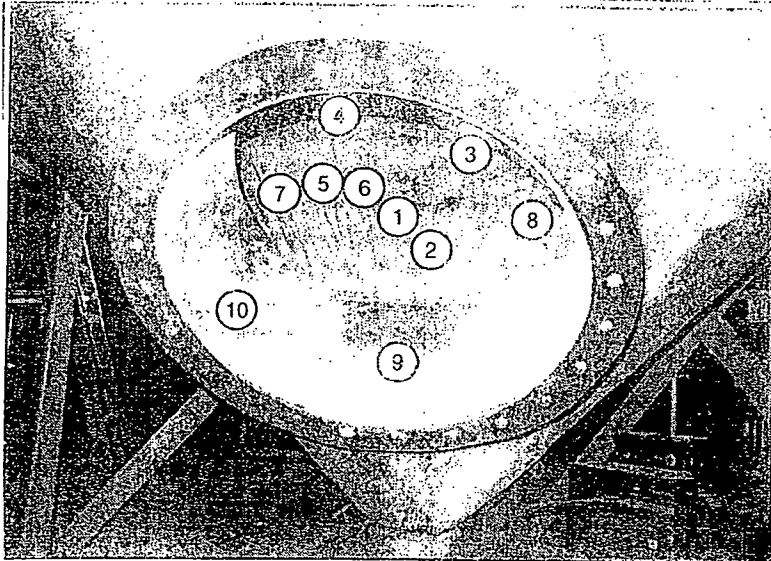
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		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
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2	See Map	<20	<200	<57	<435	22	See Map	<20	<200	<57	<435
3	See Map	<20	<200	<57	<435	23	See Map	<20	<200	<57	<435
4	See Map	<20	<200	<57	<435	24	See Map	<20	<200	<57	<435
5	See Map	<20	<200	<57	<435	25	See Map	<20	<200	<57	<435
6	See Map	<20	<200	<57	<435	26	See Map	<20	<200	<57	<435
7	See Map	<20	<200	<57	<435	27	See Map	<20	<200	<57	<435
8	See Map	<20	<200	<57	<435	28	See Map	<20	<200	<57	<435
9	See Map	<20	<200	<57	<435	29	See Map	<20	<200	<57	<435
10	See Map	<20	<200	<57	<435	30	See Map	<20	<200	<57	<435
11	See Map	<20	<200	<57	<435	31	See Map	<20	<200	<57	<435
12	See Map	<20	<200	<57	<435	32	See Map	<20	<200	<57	<435
13	See Map	<20	<200	<57	<435	33	See Map	<20	<200	<57	<435
14	See Map	<20	<200	<57	<435	34	See Map	<20	<200	<57	<435
15	See Map	<20	<200	<57	<435	35	See Map	<20	<200	<57	<435
16	See Map	<20	<200	<57	<435	36	See Map	<20	<200	<57	<435
17	See Map	<20	<200	<57	<435	37	See Map	<20	<200	<57	<435
18	See Map	<20	<200	<57	<435	38	See Map	<20	<200	<57	<435
19	See Map	<20	<200	<57	<435	39	See Map	<20	<200	<57	<435
20	See Map	<20	<200	<57	<435	40	See Map	<20	<200	<57	<435

Date Reviewed: 11-1-02 RS Supervision: J. Helms  
 Print Name

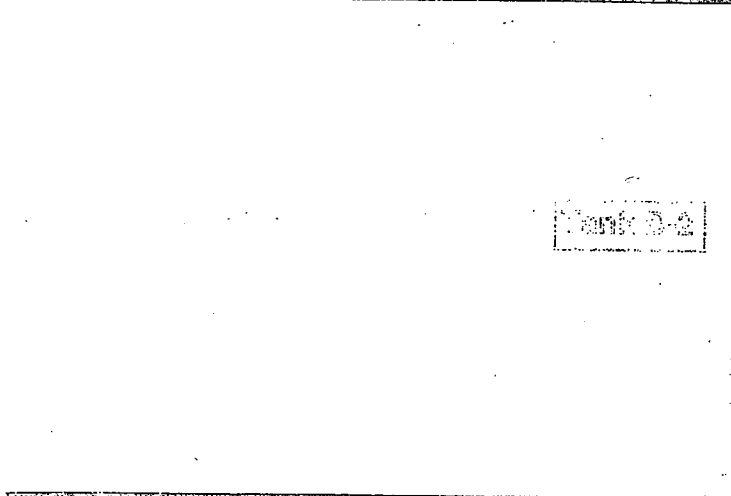
*J. Helms*  
 Signature



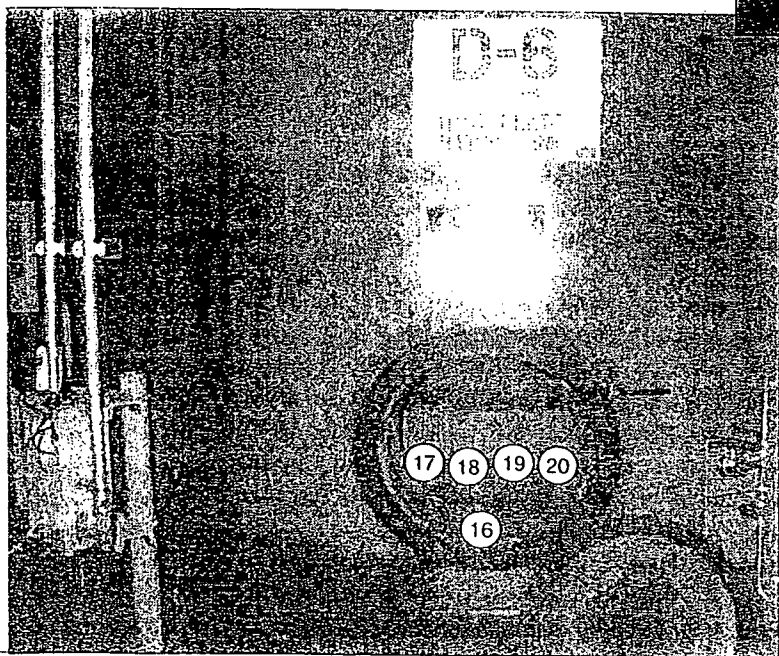
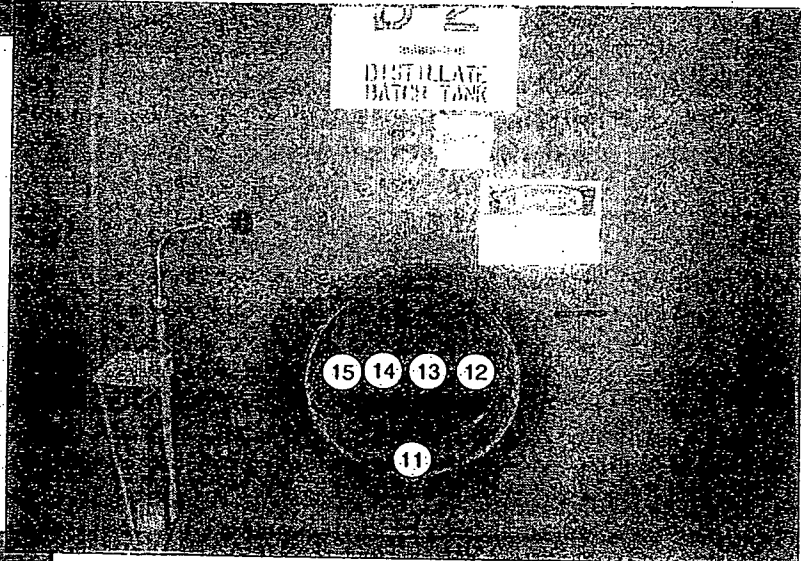
PRE#: 021101-00863-003 p.8 of 15



10-10-10

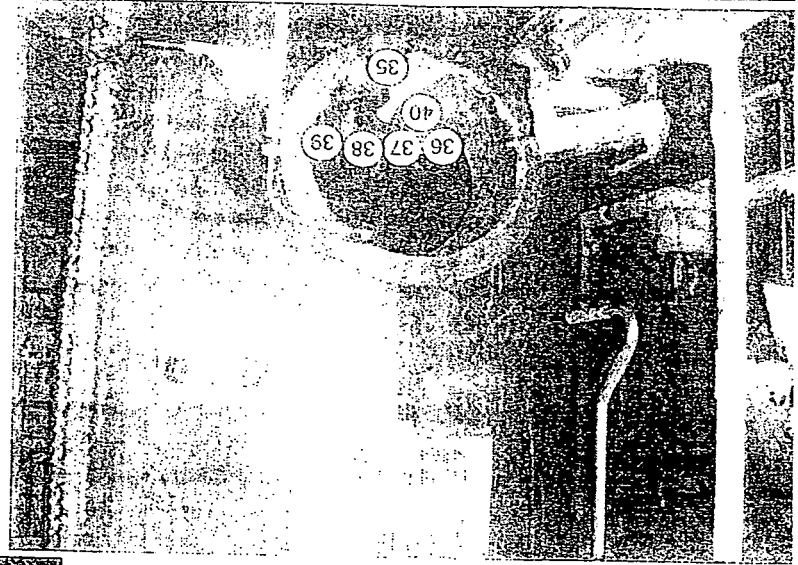


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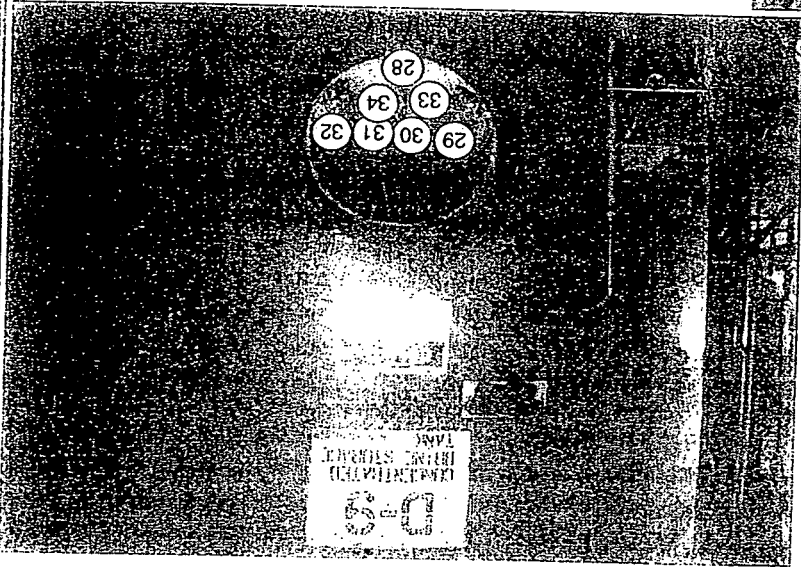


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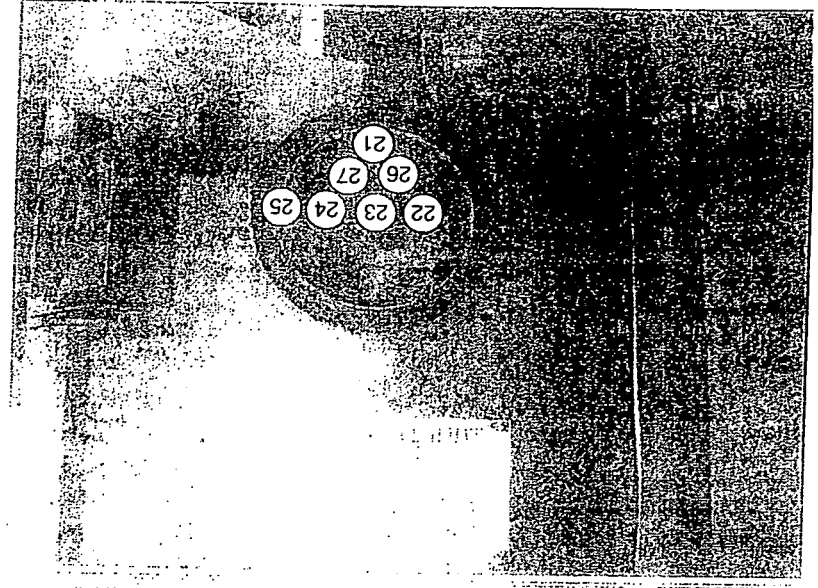
PRC-101 RSP-07.01 (REV. 7/17/00)



10-10-10



10-10-10



10-10-10

PRC# : 021101-00853-003 0.9 of 15

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)

Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

COPY

Building: 910  
Location: First Floor Tank and Filters  
Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1540  
RCT: B. Jestes / *B. Jestes* / [REDACTED]  
Print name Signature Emp. #

RCT: N/A / N/A / N/A  
Print name Signature Emp. #

PRE/REN #: N/A 021101-00883-003 p. 10 of 15  
Comments: Isotope of concern: Pu

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

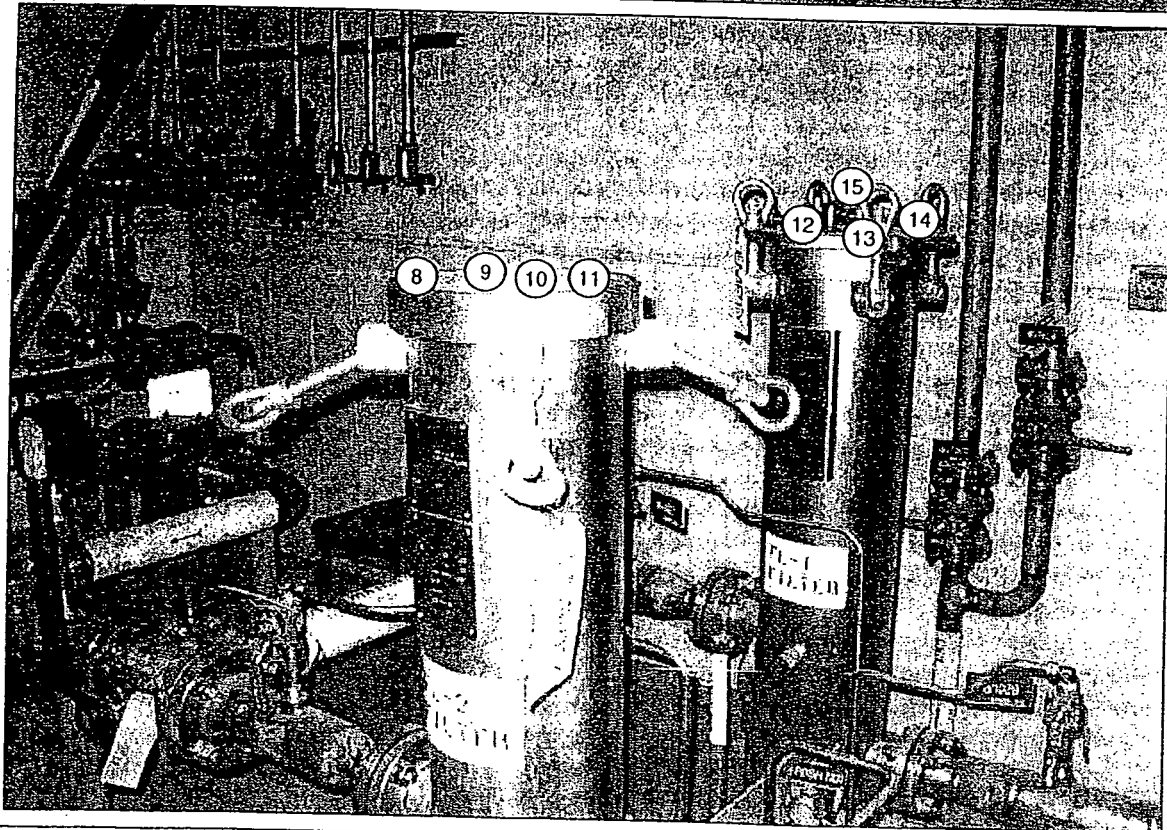
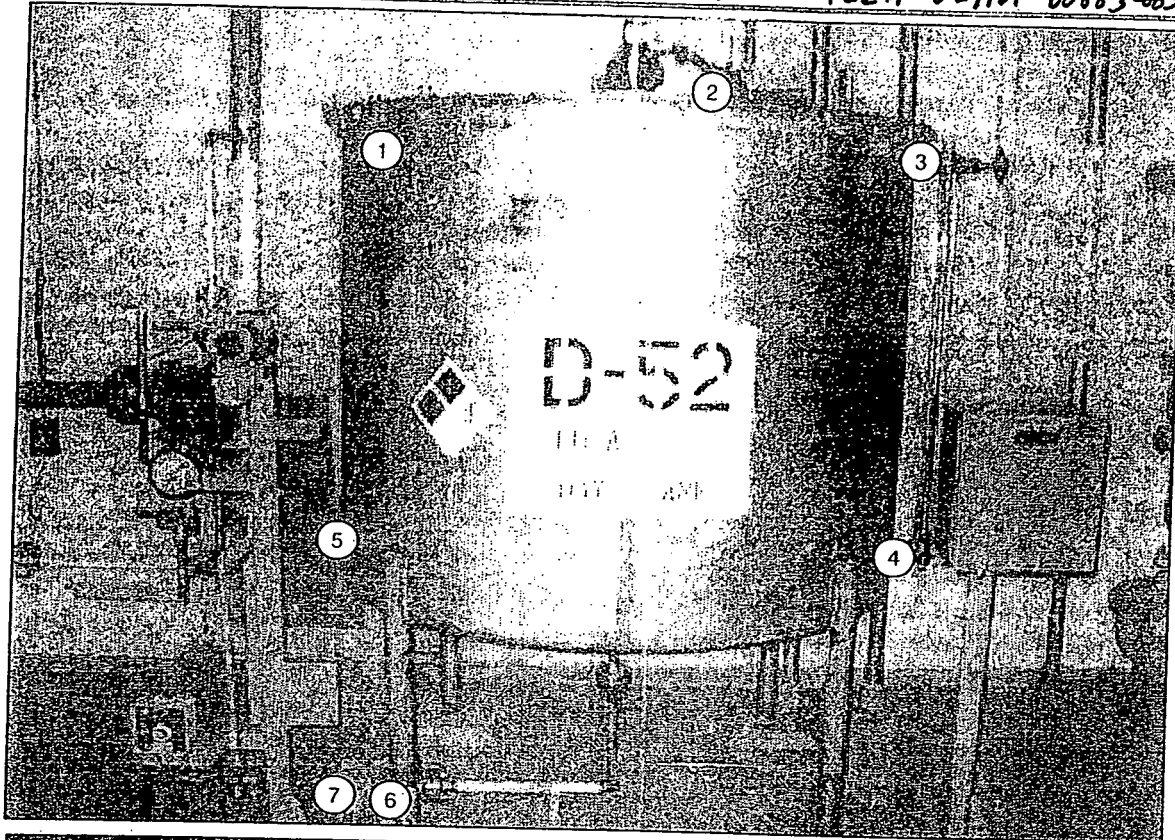
#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	D-52, 1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	D-52, 1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Filter, O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	Filter, O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-1-02 RS Supervision: J. Helms  
Print Name Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points PDE# : 02/101-00883-003 p. 11 of 15



# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

COPY

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-232 B-333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

Building: 910  
 Location: 1st floor vacuum chambers (VC) and MEMS Units  
 Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1530

RCT: B. Jestes / *B. Jestes* / [REDACTED]  
 Print name Signature Emp. #

RCT: N/A / N/A / N/A  
 Print name Signature Emp. #

PRE/REN #: N/A 02/01-00883-003

0.12 of 15

Comments: Isotope of concern: Pu

A total of (3) vacuum chambers (VC) and (3) MEMS Units were surveyed.

Survey locations and results typical for all heat exchangers and MEMS Units surveyed.

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
17	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
18	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
19	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
20	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 10-31-02 RS Supervision: J. Helms

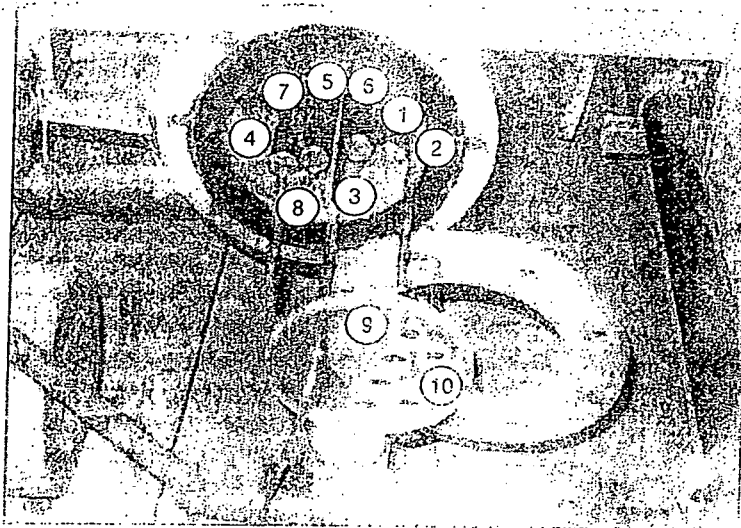
Print Name

Signature

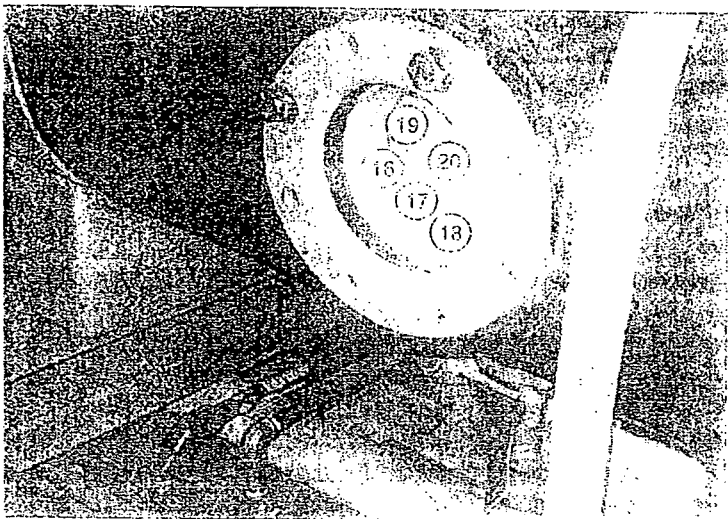
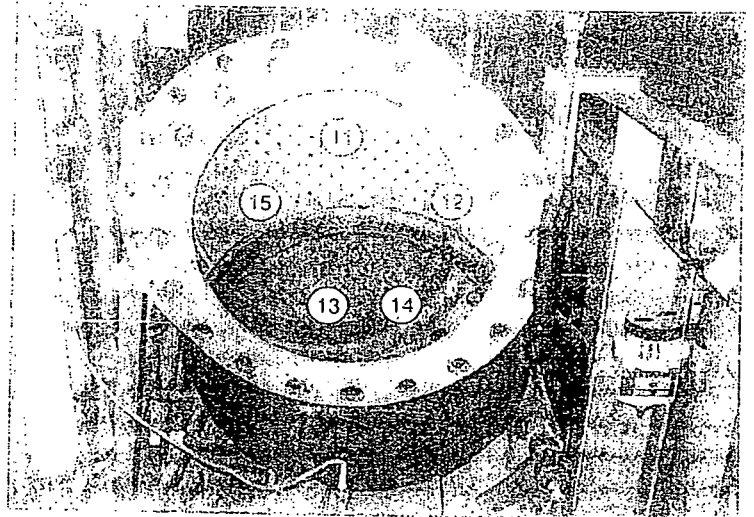


PRE#: 021101-0083-003

0.13 of 15



WEBS Unit (Front view)



WEBS Unit

**~~COPY~~**

Mfg.	Eberline	Mfg.	Eberline	Mfg.	NE-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	971	Serial#	918	Serial#	2319
Cal Due	1-15-03	Cal Due	7-23-03	Cal Due	1-10-03
Bkg.	0.1 cpm	Bkg.	36 cpm	Bkg.	4d 940 (cpm)
Efficiency	33%	Efficiency	25%	Efficiency	232d / 1,333
MDA	20 dpm	MDA	200 dpm	MDA	52d / 457 (dpm)

Purpose: sample hose contents / drain

RWP #: 02-883-0009

Date: 10-28-02 Time: 1100

RCT: B Jester / B Jester  
Print name / Signature

RCT: N/A / N/A / N/A  
 Print name Signature Emp. #

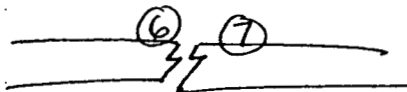
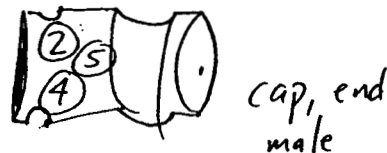
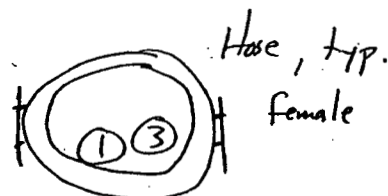
Mfg.	NA	Mfg.	NA	Mfg.	NA
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	NA	MDA	NA	MDA	NA

PRN/REN #: NA 021101-00883-003

Comments: Drain components of X-fer system to Bldg. 910

## Map

Swipe #	Location/Description Results in dpm/100cm <sup>2</sup>	Removable		Direct	
		Alpha	Beta	Alpha	Beta
1	x-fer hose	220	2200	252	2437
2	pump end	220	2200	252	2437
3	pump discharge	220	2200	252	2437
4	valve connect.	220	2200	252	2437
5	valve connect	220	2200	252	2437
6	pipe cut	220	2200	252	2437
7	pipe cut	220	2200	252	2437
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA



Date Reviewed: 10-29-02 RS Supervision: J. Helms

Print Name \_\_\_\_\_

Signature \_\_\_\_\_

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	NE Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	971	Serial#	910	Serial#	2319
Cal Due	1-15-03	Cal Due	7-2-03	Cal Due	1-10-03
Bkg.	0.0 cpm	Bkg.	40 cpm	Bkg.	5d 205 G (cpm)
Efficiency	33%	Efficiency	25%	Efficiency	123.20 / 3330
MDA	20 dpm	MDA	200 dpm	MDA	57d / 420 (dpm)

Mfg. <u>NA</u>	Mfg. <u>NA</u>	Mfg. <u>NA</u>
Model <u>NA</u>	Model <u>NA</u>	Model <u>NA</u>
Serial# <u>NA</u>	Serial# <u>NA</u>	Serial# <u>NA</u>
Cal Due <u>NA</u>	Cal Due <u>NA</u>	Cal Due <u>NA</u>
Bkg. <u>NA</u>	Bkg. <u>NA</u>	Bkg. <u>NA</u>
Efficiency <u>NA</u>	Efficiency <u>NA</u>	Efficiency <u>NA</u>
MDA <u>NA</u>	MDA <u>NA</u>	MDA <u>NA</u>

**Survey Type:** Contamination

# COPY

Building: 910

Location: Outside x-fer pipes/hoses

Purpose: Release

RWP #: 02-883-0009

Date: 10-24-02

Time: 13:30

RCT: B. Jester  
Print name

**Signature**

RCT: NA  
Print name

NA  
Signature

Emp. #

PRN/REN #: NA 021101-00883-003

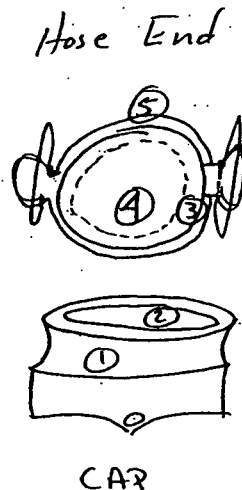
p. 15 of 15

Comments: Breach of hose - tanker side connection

## SURVEY RESULTS

[illegible]

## Map



Date Reviewed: 10-29-02 RS Supervision: J. Helms

---

**Print Name**

Signature \_\_\_\_\_



# Standard Air Sample Analysis Form

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of feedwater lines top& bottom level RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-78 79 JA 11-4-02	
Location	Top & bottom level	
Sample Model/Serial #	LoVol/ # 9998	
Sampler Calibration Due Date	3/16/03	
Date / Time On	10/31/02 12:30	
Date / Time Off	10/31/02 14:30	
Total Run Time (min)	120	
Average Flow Rate (lpm or cfm)	4 cfm	
m3/min = (lpm x .001 or cfm x .0283)	0.1132	
Volume V=m3/min x time	13.58	

## FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/31/02	
Instrument Model / Serial #	Sac 4 / 818	
Efficiency	33.00%	
Instrument Calibration Due Date	3/20/03	
Total Count	3107	
Count Duration (min)	10	
Gross Count Rate (cpm)	310.7	
Background Count Rate (cpm)	0.3	
Net Count Rate (cpm)	310.4	
Net Activity (C1) in dpm	931.2	

## SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	11/4/02-0900	N/A
Instrument Model / Serial #	N/A	Sac 4/ 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.4	N/A
Net Count Rate (cpm)	N/A	0	N/A
Net Activity (C2) in dpm	N/A	0	N/A

(with Koval) (if C2>C1) (Field Screen)  
 DAC =  $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DACREF)}$  DAC =  $\frac{C2}{(V)(CF)(DACREF)}$  DAC =  $\frac{C1}{(V)(CF)(DACREF)}$

(low volume) (CAM/SAAM) (FAH) (lapel)  
 CF=0.7 CF=1.0 CF=0.7 CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	17.18	0	N/A
RCT Printed Name	L Severtson	L Severtson	N/A
RCT Signature	<i>[Signature]</i>	<i>[Signature]</i>	N/A
			N/A

Approved by: J. Helms [Signature] [Signature] 11-4-02  
 RS Supervision Print Name Signature Date

# Standard Air Sample Analysis Form

**COPY**

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg #	910	Purpose:	Breach of HX east bank		RWP#:	02-883-009
Isotope:	PU	Inhalation Class:	W	Filter Media:	47 mm glass	
Sample ID #	2002-76 77-A		11-02			
Location	Top floor					
Sample Model/Serial #	LoVol/ # 9998					
Sampler Calibration Due Date	3/16/03					
Date / Time On	10/29/02 13:30					
Date / Time Off	10/29/02 14:00					
Total Run Time (min)	30					
Average Flow Rate (lpm or cfm)	3.5 cfm					
m3/min = (lpm x .001 or cfm x .0283)	0.0849					
Volume V = m3/min x time	2.55					

## FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/29/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	443		
Count Duration (min)	10		
Gross Count Rate (cpm)	44.3		
Background Count Rate (cpm)	0.6		
Net Count Rate (cpm)	43.7		
Net Activity (C1) in dpm	131.1		

## SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	10/30/02-13:30	N/A
Instrument Model / Serial #	N/A	Sac 4 / 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.1	N/A
Net Count Rate (cpm)	N/A	0.3	N/A
Net Activity (C2) in dpm	N/A	0.9	N/A

(with Koval)	(if C2 ≥ C1)	(Field Screen)
DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DACREF)}$	DAC = $\frac{C2}{(V)(CF)(DACREF)}$	DAC = $\frac{C1}{(V)(CF)(DACREF)}$
(low volume)	(CAM/SAAM)	(FAH)
CF=0.7	CF=1.0	CF=0.7
(lapel)		
CF=1.0 or 0.7		
lpm = CFM/0.0353	CFM = lpm x 0.0353	m3/min = CFM x 0.0283
m3/min = lpm x 0.001		
Decay Time (t4-t3) in Hours	N/A	24
DACREF	5.7	5.7
Correction Factor (CF)	0.7	0.7
KOVAL Factor (K)	N/A	N/A
Calculated DAC:	12.80	0.088
RCT Printed Name	L. Severtson	L. Severtson
RCT Signature	<i>L. Severtson</i>	<i>L. Severtson</i>
Approved by:		
RS Supervision	J. Heums	1
Print Name		Signature
		Employee #
		Date
		11-4-02

## Standard Air Sample Analysis Form

COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of HX west bank RWP#: 02-883-009Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-77 78 JA		
Location	Top floor		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/29/02 14:00		
Date / Time Off	10/29/02 14:30		
Total Run Time (min)	30		
Average Flow Rate (lpm or cfm)	3.5 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V = m3/min x time	2.55		

## FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/29/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	679		
Count Duration (min)	10		
Gross Count Rate (cpm)	67.9		
Background Count Rate (cpm)	0.6		
Net Count Rate (cpm)	67.3		
Net Activity (C1) in dpm	201.9		

## SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	11/1/02	N/A
Instrument Model / Serial #	N/A	Sac 4 / 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	5	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.5	N/A
Background Count Rate (cpm)	N/A	0.3	N/A
Net Count Rate (cpm)	N/A	0.2	N/A
Net Activity (C2) in dpm	N/A	0.6	N/A

(with Koval)

(if C2 &gt; C1)

(Field Screen)

$$\text{DAC} = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(\text{DACREF})}$$

$$\text{DAC} = \frac{C2}{(V)(CF)(\text{DACREF})}$$

$$\text{DAC} = \frac{C1}{(V)(CF)(\text{DACREF})}$$

(low volume)

(CAM/SAAM)

(FAH)

(lapel)

CF=0.7

CF=1.0

CF=0.7

CF=1.0 or 0.7

lpm = CFM/0.0353

CFM = lpm x 0.0353

m3/min = CFM x 0.0283

m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DACREF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	19.85	0.059	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	<i>L Severtson</i>	<i>L Severtson</i>	N/A
			N/A

Approved by:

RS Supervision

J. Helms

1 *JH*

1

111-4-02

Print Name

Signature

Date

## Standard Air Sample Analysis Form

COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Removal of Filter Equipment RWP#: 02-883-009  
 Isotope: Pu Inhalation Class: W Filter Media: 47mm

Sample ID #	200273	2	3
Location	Outside	N/A	N/A
Sample Model / Serial #	Low Vol. / #9998	N/A	N/A
Sampler Calibration Due Date	Prior to Use / Weekly	N/A	N/A
Date / Time On	10/24/02 15:10	N/A	N/A
Date / Time Off	10/24/02 15:24	N/A	N/A
Total Run Time (min)	14	N/A	N/A
Average Flow Rate (lpm or cfm)	3	N/A	N/A
m3/min = (lpm x .001 or cfm x .0283)	0.0849	N/A	N/A
Count Rate (cpm)	1.19	N/A	N/A

## FIRST COUNT ANALYSIS DATA:

Date	10/24/02	N/A	N/A
Time (t3)	1545	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1156	N/A	N/A
Instrument Calibration Due Date	1/13/03	N/A	N/A
Total Count	2410	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	241	N/A	N/A
Background Count Rate (cpm)	0.1	N/A	N/A
Net Count Rate (cpm)	240.9	N/A	N/A
Net Count Rate (cpm)	722.7	N/A	N/A

## SECOND COUNT ANALYSIS DATA:

Date	10/28/02	N/A	N/A
Time (t4)	0730	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1196	N/A	N/A
Instrument Calibration Due Date	1/13/02	N/A	N/A
Total Count	5	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	0.5	N/A	N/A
Background Count Rate (cpm)	0.4	N/A	N/A
Net Count Rate (cpm)	0.1	N/A	N/A
Net Count Rate (cpm)	0.3	N/A	N/A

(with Koval)

$$DAC = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DACREF)}$$

(if  $C2 \geq C1$ )

$$DAC = \frac{C2}{(V)(CF)(DACREF)}$$

(Field Screen)

$$DAC = \frac{C1}{(V)(CF)(DACREF)}$$

(low volume)

(CAM/SAAM)

(FAH)

(lapel)

CFM = lpm x 0.0353

m3/min = CFM x 0.0283

CF=0.7

CF=1.0

CF=0.7

CF=1.0 or 0.7

772 HRS

m3/min = lpm x 0.001

lpm = CFM/0.0353

	1st Count	2nd Count	1st Count	2nd Count	1st Count	2nd Count
Decay Time (t4-t3) in Hours	N/A	772	N/A	N/A	N/A	N/A
DACREF	4.8		N/A		N/A	
Correction Factor (CF)	0.7		N/A		N/A	
KOVAL Factor (K)	N/A		N/A		N/A	
Calculated DAC:	180.96	0.08	N/A	N/A	N/A	N/A
RCT Printed Name	B. Jests		N/A	N/A	N/A	N/A
RCT Signature	<i>B. Jests</i>		N/A	N/A	N/A	N/A
Er					N/A	N/A
Approved by						
RS Supervision	J. Helms					
Print Name						
Signature						
Date						1/10-29-02

# Standard Air Sample Analysis Form

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Piping & hose removal RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-74		
Location	Norh side of bldg.		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/28/02 10:25		
Date / Time Off	10/28/02 11:15		
Total Run Time (min)	50		
Average Flow Rate (lpm or cfm)	3 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V = m3/min x time	4.25		

## FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/28/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	3348		
Count Duration (min)	10		
Gross Count Rate (cpm)	334.8		
Background Count Rate (cpm)	0.4		
Net Count Rate (cpm)	334.4		
Net Activity (C1) in dpm	1003.2		

## SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	11/1/02-10:00	N/A
Instrument Model / Serial #	N/A	Sac 4 / 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.3	N/A
Net Count Rate (cpm)	N/A	0.1	N/A
Net Activity (C2) in dpm	N/A	0.3	N/A

(with Koval)

$$DAC = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DACREF)}$$

(if C2 > C1)

$$DAC = \frac{C2}{(V)(CF)(DACREF)}$$

(Field Screen)

$$DAC = \frac{C1}{(V)(CF)(DACREF)}$$

(low volume)

CF=0.7

(CAM/SAAM)

CF=1.0

(FAH)

CF=0.7

(lapel)

CF=1.0 or 0.7

lpm = CFM/0.0353

CFM = lpm x 0.0353

m3/min = CFM x 0.0283

m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	59.40	0.018	N/A
RCT Printed Name	L. Severtson	L. Severtson	N/A
RCT Signature	<i>L. Severtson</i>	<i>L. Severtson</i>	N/A
			N/A

Approved by:

RS Supervision

*J. Helms*

*19/11/02*

Print Name

Signature

Date



Property



Waste



Sample

**RELEASE EVALUATION FORM**Page 1 of 15Release Evaluation No.: 021101-00883-002 EXTENDED: No EXPIRES: N/A Charge No.: N/A**PART I****SENDER/CUSTODIAN ACKNOWLEDGEMENT****Description of Property/Waste/Sample To Be Released/Transferred:**

Building 910 – Process feed & drain lines associated with all system components for the B910 filtration system. This includes any valves, flanges, tanks (excluding the Sand Tanks), distillate tanks & system components, transfer hoses, vacuum chambers, piping, or other system components. Also included is the wires, cables, support structures, and any associated incidental cabinets, furniture, trash, or waste produced during the removal of these items.

*NOTE: This release evaluation does not pertain to the Sand Filter Tanks.*

**Current Location:** B910

**Destination:** Front Range Landfill, 1830 Weld County Road 5, Erie, CO, 80112

**New Recipient/Custodian:** Same as above

**History/Process Knowledge:**


The materials described in this release evaluation were never used for the intended purpose. Building 910 was constructed to process and treated the liquid waste from the RFETS Solar Ponds. However, Solar Pond water was never processed and the systems in B910 were never used for the intended purpose. A test run was performed on the system, after which the system was shut-down and never used again.

Pre-job surveys performed prior to the generation of this release evaluation show no presence of DOE controlled radioactive materials.

**Therefore, there is a very low potential for DOE controlled radioactive materials to be present on this equipment and materials.**

Has the specified material ever been in an RBA/CA or contacted DOE controlled radioactive materials? NO

- 1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate.
- 2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation.

Sender/Custodian: Emp. No: Date: 01/11/02Ext: 6438

☐  
Property☒  
Waste☐  
Sample**RELEASE EVALUATION FORM**Page 2 of 15Release Evaluation No.: 021101-00883-002 EXTENDED: No EXPIRES: N/A Charge No.: N/A**PART II RADIOLOGICAL ENGINEERING****SPECIFIC REQUIREMENTS AND/OR COMMENTS:****SURVEYS REQUIRED**

The B910 system and associated material have met all of the requirements for potential unrestricted release from radiological controls.

Historical assessment information on B910 present a limited concern for this material to contain or be contaminated with DOE controlled radioactive materials. Detailed sampling and surveys SHALL performed on this equipment.

- Custodian, retain a copy of all documents required by this release evaluation. The sender/custodian will be responsible for ensuring a copy of this release evaluation is available for auditing/due diligence purposes.

WHEN LINES OR PIPING ARE REMOVED, PROJECT SHALL REMOVE EACH SECTION OF LINE AND PLACE ONTO FLOOR IN A MANNER AS TO PROVIDE EVENTUAL ACCESS TO RCT FOR SURVEYS TO BE PERFORMED. For example, the lines should not be piled into a jumbled mess that would prevent the technician from gaining safe access to all areas of the lines; lines should be placed onto ground in as organized a manner as practical.

1. **HEAT EXCHANGERS, VACUUM CHAMBERS, & MEMS UNITS:** RCT, perform a 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on the interior surfaces of each unit. ALSO, obtain additional investigative surveys based on initial results at the discretion of the RCT.
2. **TANKS, FILTRATION CHAMBERS:** RCT, perform 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on areas of collection, tank outlets, and other areas that show a potential for accumulating material during process.
3. **FEED & DRAIN PIPING SURVEYS:** RCT, perform a 10% scan of all accessible surfaces of the piping. Obtain ten (10) fixed activity measurements AND ten (10) removable activity measurements on the interior surfaces of the piping.

(NOTE, piping diameter should be large enough to place an NE Electra probe inside the pipe. Contact Radiological Engineering R. Neveau, x3461 if this assumption is not true).

RCT shall use professional judgement on the need to obtain any additional fixed activity measurements based on results of field measurements.

**Forward all surveys to Radiological Engineering for final review prior to placing any items or objects associated with this D&D activity into its final shipping waste container.**

Evaluated: Brock Neveau / [Signature] Emp. No. [Redacted] Date: 11-01-02 Ext: 3461  
Radiological Engineer

**APPROVAL FOR TRANSFER/SHIPMENT**

Approved: [Signature] / J.P. Titus Emp. No. [Redacted] Date: 11/11/02 Ext: 5825  
Radiological Engineer

**PROPERTY/WASTE RELEASE EVALUATION SIGNATURE REQUIREMENTS**Release Evaluation #: 021101-00883-002Page ~~1~~ of 15

3

RN

**Release Evaluation for Waste:**

A Release Evaluation for Waste requires an evaluation and unrestricted release approval signature. The evaluation signature is by the Radiological Engineer (RE) providing the methods or criteria for unrestricted release (i.e., survey requirements, analytical requirements, no survey required, etc.). The unrestricted release approval signature for a Release Evaluation for Waste shall be a RE authorized to provide unrestricted release approval. In addition, the evaluation and unrestricted release approval signatures shall not be the same RE. The intent of this provision is to provide peer review of the evaluation and method of unrestricted release. It is important the RE take the peer review process seriously and not become a "rubber stamp" for their fellow engineer.

**Release Evaluation for Property:**

A Release Evaluation for Property requires an evaluation and unrestricted release approval signature. For a Release Evaluation for Property, the evaluation and unrestricted release signature may be the same RE. In the past, only one signature was required for property for which a RE could provide an unrestricted release on the basis of process knowledge/history.

**Release Evaluation for Samples:**

Samples are any waste or material that is being shipped to an off-site facility for analysis. Samples that may be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques may be authorized for shipment to an off-site facility using the signatory requirements specified for property. Samples which cannot be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques shall be authorized for shipment from the Site using the methodology specified for waste, i.e., second signature being provided by a RE authorized to perform peer review and approval for shipment.

The approval for transfer/shipment section of a Sample Release Evaluation (SRE) shall be revised as noted below for samples which cannot be provide with an unrestricted release.

*"The samples specified in Part 1 of this release evaluation are being provided with authorization for transport as non-radioactive materials in accordance with Department of Transportation (49 CFR) regulation. This authorization for shipment does not constitute an unrestricted release."*

**Additional Documentation:**

Number of lines per section may be modified or additional pages attached to ensure adequate documentation of information necessary to perform release evaluation.

Additional pages or attachments to a release evaluation shall have the evaluation number, Page \_\_ of \_\_, initials of Radiological Engineer signing approval for transfer/shipment and date.



# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2316
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	12/11/02
Bkg.	0.2 cpm	Bkg.	35 cpm	Bkg.	A-1.0 B-768(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-200 B-307
MDA	20 dpm	MDA	200 dpm	MDA	A-37 B-429(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

COPY

Building: 910

Location: First Floor Valve and piping

Purpose: Job coverage

RWP #: 02-883-0009

Date: 11/01/02 Time: 1100

RCT: B. Jests / *B. Jests* / [REDACTED]

Print name      Signature      Emp. #

RCT: N/A / N/A / N/A

Print name      Signature      Emp. #

PRE/REN #: N/A 02 1101-00883-002 p. 4 of 15

Comments: Isotope of concern: Pu

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
2	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
3	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
4	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
5	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
6	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
7	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
8	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
9	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
10	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-4-02 RS Supervision: J. Helms

Print Name

Signature

Emp. #

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

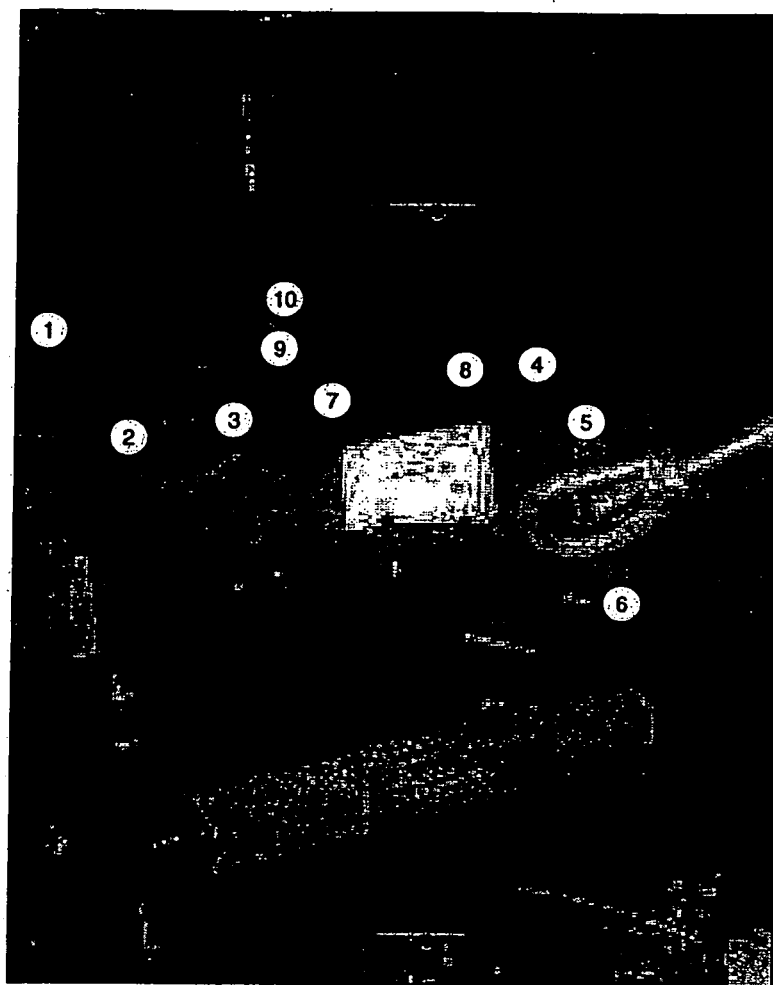
RADIOLOGICAL SAFETY

Drawing Showing Survey Points

COPY

PAE#: 021101-00883-001

p. 5 of 15



# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.0 cpm	Bkg.	38 cpm	Bkg.	A-4.0 B-846(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-232 B-333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-415(dpm)

Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

COPY

Building: 910  
 Location: 2" pipe removal  
 Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/31/02 Time: 1600

RCT: B. Jests / *B. Jests*  
 Print name Signature Emp. #

RCT: N/A / N/A / N/A  
 Print name Signature Emp. #

PRE/REN #: N/A PRE#: 024101-00883-002 p. 6 of 15  
 Comments: Isotope of concern: Pu  
 Removal of 2" S.S. piping in basement

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
2	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
3	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
4	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
5	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
6	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
7	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
8	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
9	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
10	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
11	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
12	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
13	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
14	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
15	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-4-02 RS Supervision: J. Helms

Print Name

Signature

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	772	Serial#	2314
Cal Due	1/13/03	Cal Due	6/19/03	Cal Due	4/8/03
Bkg.	0.2 cpm	Bkg.	33 cpm	Bkg.	A-5.0 B-862(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-231 B-320
MDA	20 dpm	MDA	200 dpm	MDA	A-57 B-435(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

# COPY

Building: 910

Location: Basement Tanks

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/30/02 Time: 1530

RCT: B. Jestes / *B. Jestes* Emp. # [Redacted]

Print name Signature

RCT: N/A / N/A / N/A

Print name Signature Emp. #

PRE/REN #: N/A 02/10/01-00883-002

Comments: Isotope of concern: Pu

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	See Map	<20	<200	<57	<435	21	See Map	<20	<200	<57	<435
2	See Map	<20	<200	<57	<435	22	See Map	<20	<200	<57	<435
3	See Map	<20	<200	<57	<435	23	See Map	<20	<200	<57	<435
4	See Map	<20	<200	<57	<435	24	See Map	<20	<200	<57	<435
5	See Map	<20	<200	<57	<435	25	See Map	<20	<200	<57	<435
6	See Map	<20	<200	<57	<435	26	See Map	<20	<200	<57	<435
7	See Map	<20	<200	<57	<435	27	See Map	<20	<200	<57	<435
8	See Map	<20	<200	<57	<435	28	See Map	<20	<200	<57	<435
9	See Map	<20	<200	<57	<435	29	See Map	<20	<200	<57	<435
10	See Map	<20	<200	<57	<435	30	See Map	<20	<200	<57	<435
11	See Map	<20	<200	<57	<435	31	See Map	<20	<200	<57	<435
12	See Map	<20	<200	<57	<435	32	See Map	<20	<200	<57	<435
13	See Map	<20	<200	<57	<435	33	See Map	<20	<200	<57	<435
14	See Map	<20	<200	<57	<435	34	See Map	<20	<200	<57	<435
15	See Map	<20	<200	<57	<435	35	See Map	<20	<200	<57	<435
16	See Map	<20	<200	<57	<435	36	See Map	<20	<200	<57	<435
17	See Map	<20	<200	<57	<435	37	See Map	<20	<200	<57	<435
18	See Map	<20	<200	<57	<435	38	See Map	<20	<200	<57	<435
19	See Map	<20	<200	<57	<435	39	See Map	<20	<200	<57	<435
20	See Map	<20	<200	<57	<435	40	See Map	<20	<200	<57	<435

Date Reviewed: 11-1-02 RS Supervision:

J. Helms

Print Name

Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

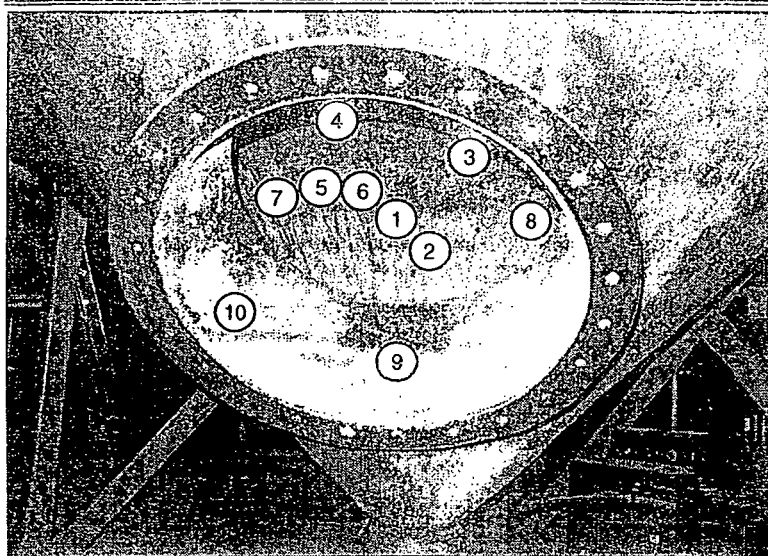
RADIOLOGICAL SAFETY

Drawing Showing Survey Points

COPY

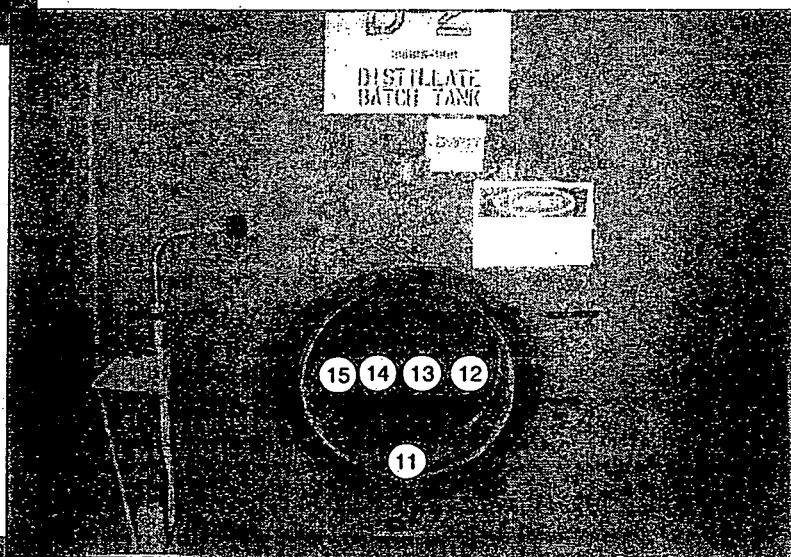
PRE#: 021101-00883-00 2

p 8 of 15

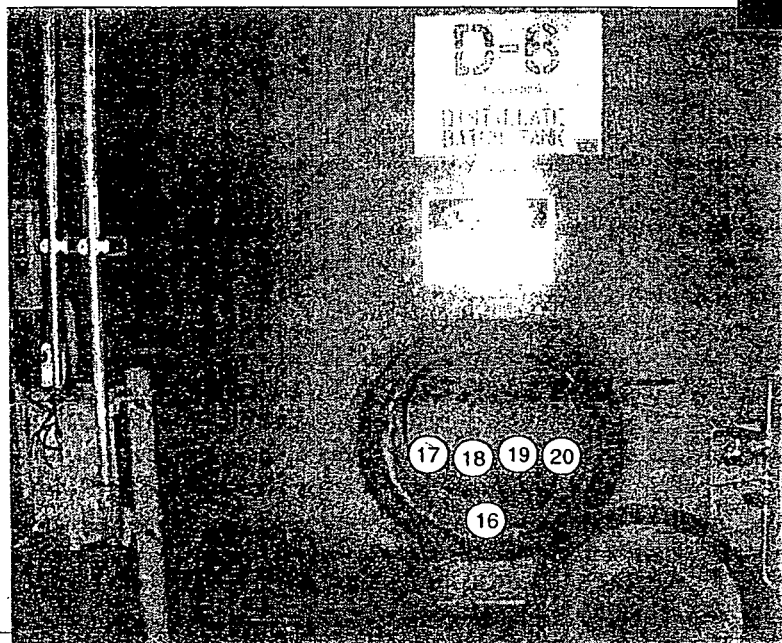


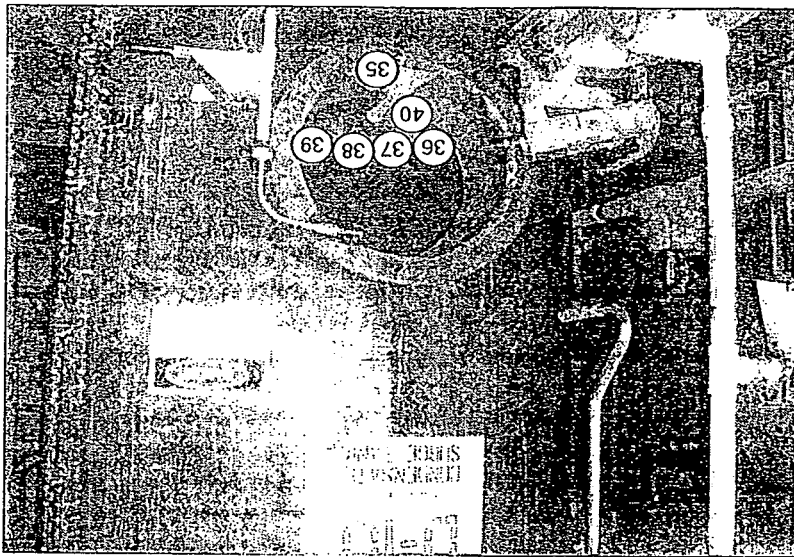
Tank D-12

Tank D-2

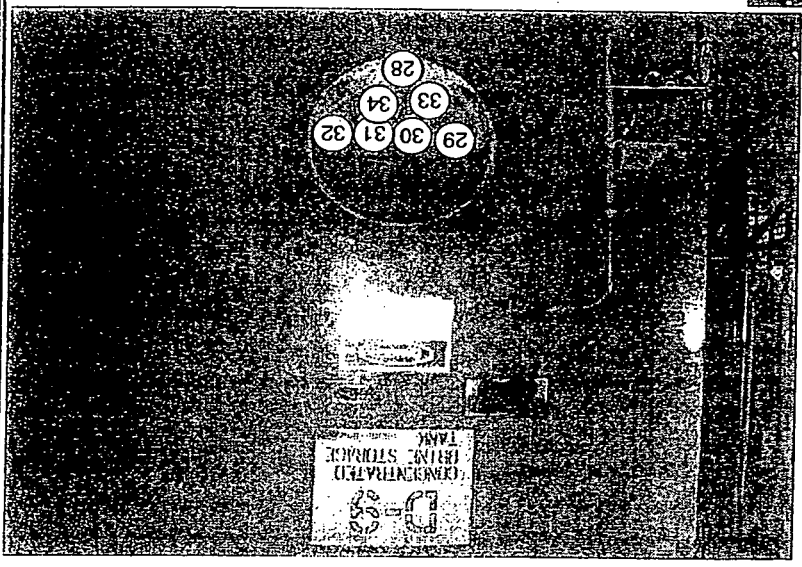


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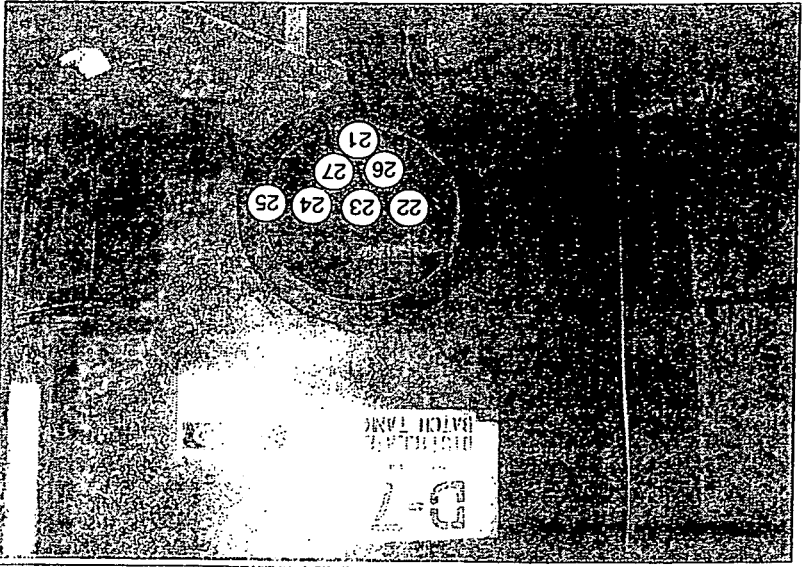




Tank D-10



Tank D-9



Tank D-7

PRF#: 021101-00853-002

0.9 of 15

COPY

Biological Laboratory  
Drawing Showing Survey Points

ROCKY BLAKE ENVIRONMENTAL TECHNOLOGY, INC.

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)

Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

# COPY

Building: 910  
 Location: First Floor Tank and Filters  
 Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1540

RCT: B. Jestes / *B. Jestes*  
 Print name Signature

RCT: N/A / N/A / N/A  
 Print name Signature Emp. #

PRE/REN #: N/A 02/10/01-00883-002

Comments: Isotope of concern: Pu

## SURVEY RESULTS

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	D-52, 1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	D-52, 1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Filter, O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	Filter, O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	Filter, I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-1-02 RS Supervision: J. Helms

Print Name

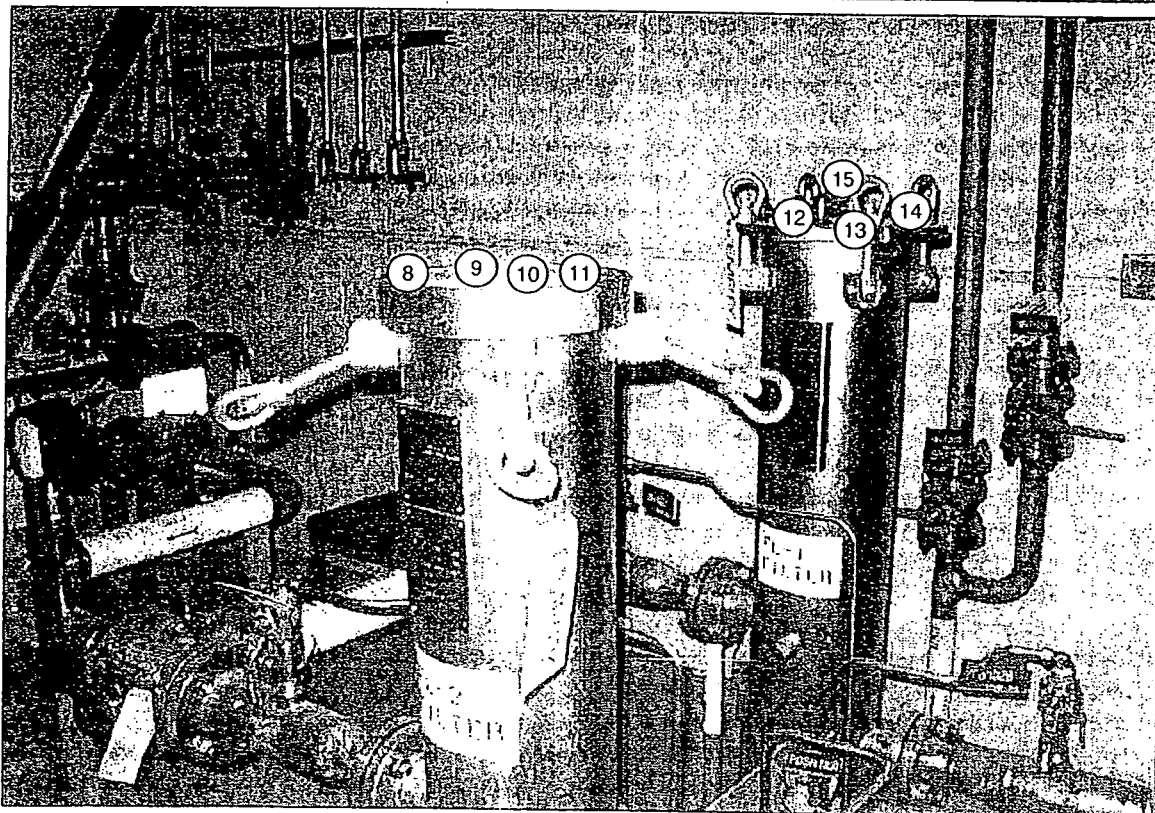
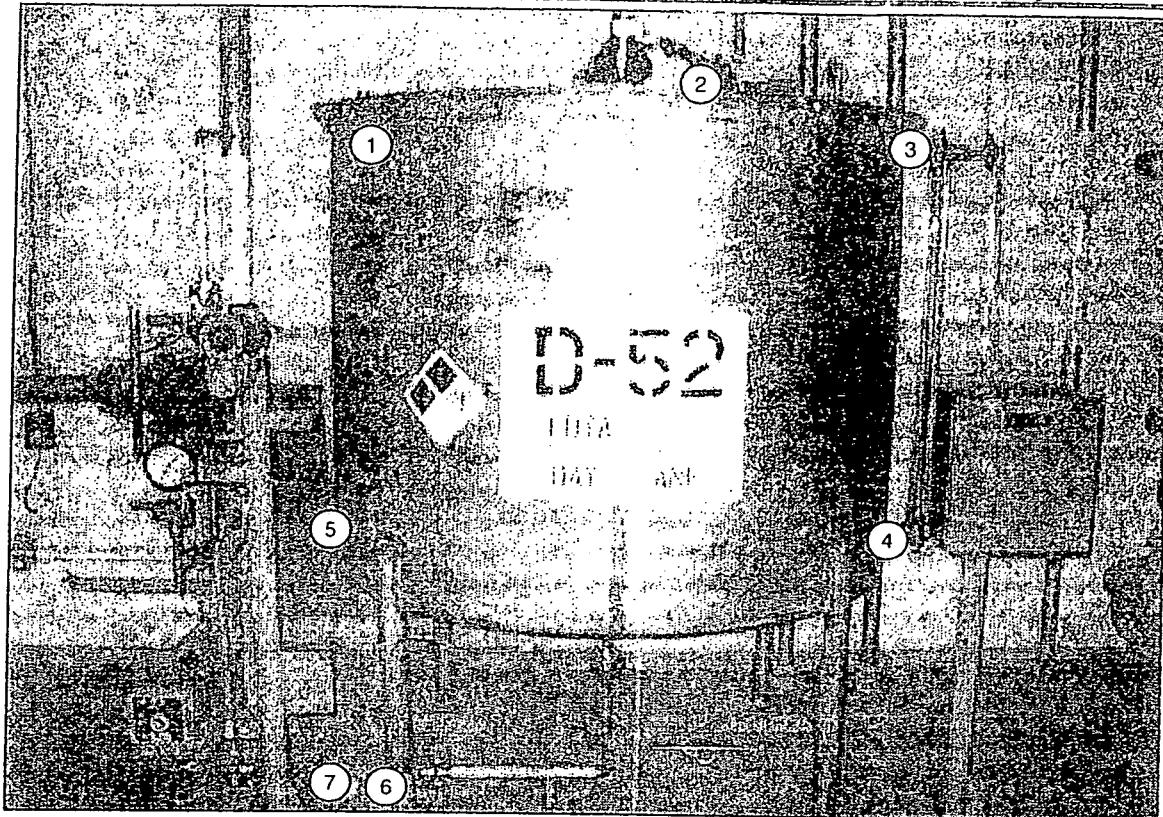
Signature

PRO-164-RSP-07.01 (effective 7/12/01)



ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE  
RADIOLOGICAL SAFETY

Drawing Showing Survey Points PRE#: 02/101-00863-002 0. 11 of 15





# **ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE**

# **COPY**

## **INSTRUMENT DATA**

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-232 B-333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)


Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

**Survey Type: Contamination**

Building: 910  
 Location: 1st floor vacuum chambers (VC) and MEMS Units  
 Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1530

RCT: B. Jestes / *B. Jestes* /   
 Print name Signature

RCT: N/A / N/A / N/A  
 Print name Signature Emp. #

PRE/REN #: N/A 02/101-00883-002

Comments: Isotope of concern: Pu

A total of (3) vacuum chambers (VC) and (3) MEMS Units were surveyed.

Survey locations and results typical for all heat exchangers and MEMS Units surveyed.

## **SURVEY RESULTS**

(Results in dpm / 100cm<sup>2</sup>)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
17	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
18	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
19	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
20	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 10-31-02 RS Supervision: J. Helms

Print Name

Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

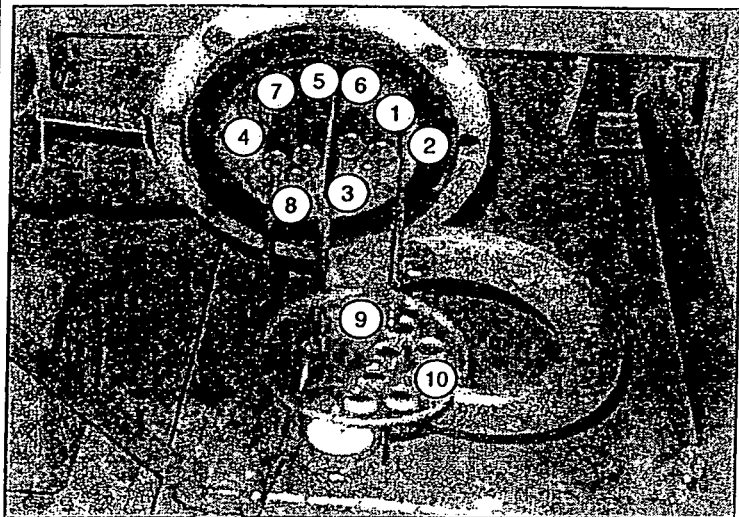
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Drawing Showing Survey Points

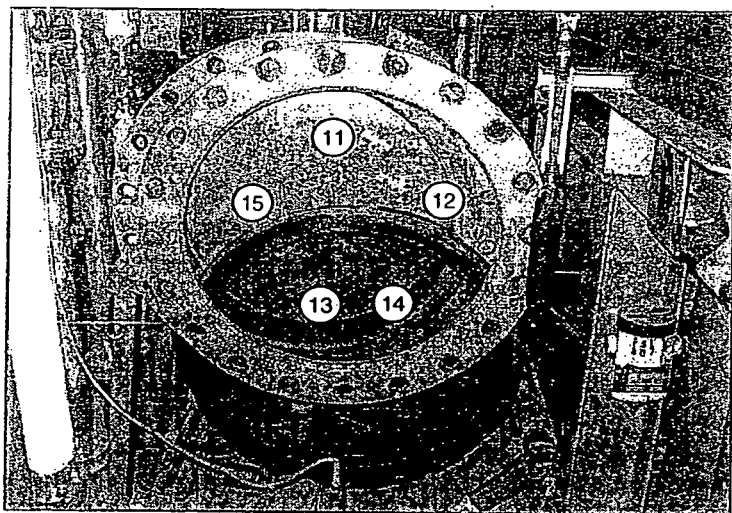
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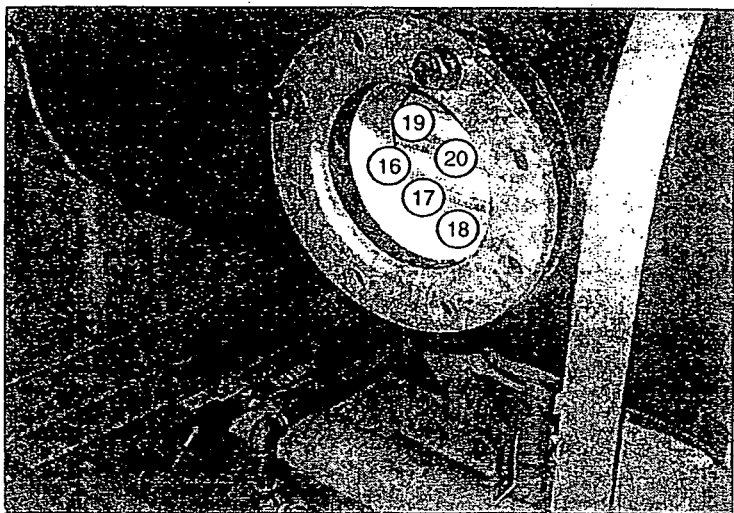
p 13 of 15



MEMS Unit (Front View)



VC unit, front



VC unit, side

## 63

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

## INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	NE Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	971	Serial#	918	Serial#	2319
Cal Due	1-15-03	Cal Due	7-2-03	Cal Due	1-10-03
Bkg.	0.0 cpm	Bkg.	40 cpm	Bkg.	5d 205 G (cpm)
Efficiency	33%	Efficiency	25%	Efficiency	123.29 23330
MDA	20 dpm	MDA	200 dpm	MDA	570 / 428 (dpm)

Mfg. <u>NA</u>	Mfg. <u>NA</u>	Mfg. <u>NA</u>
Model <u>NA</u>	Model <u>NA</u>	Model <u>NA</u>
Serial# <u>NA</u>	Serial# <u>NA</u>	Serial# <u>NA</u>
Cal Due <u>NA</u>	Cal Due <u>NA</u>	Cal Due <u>NA</u>
Bkg. <u>NA</u>	Bkg. <u>NA</u>	Bkg. <u>NA</u>
Efficiency <u>NA</u>	Efficiency <u>NA</u>	Efficiency <u>NA</u>
MDA <u>NA</u>	MDA <u>NA</u>	MDA <u>NA</u>

**Survey Type:** Contamination

**COPY**

Building: 910

Location: Outside x-fer pipes / hoses

Purpose: Release

RWP #: 02-883-0009

Date: 10-24-02

Time: 1330

RCT: B. Jester

---

**Print name**

13/este

**Signature**

RCT: NA

**Print name**

14A

**Signature**

1 NA

**Emp. #**

PRN/REN #: NA 02/101-00883-002

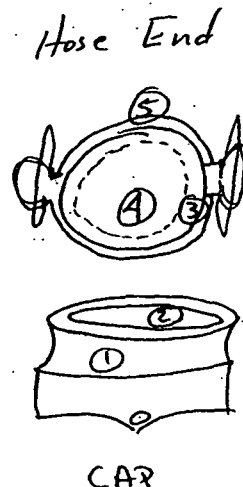
p. 15 of 15

Comments: Breach of hose - tanker side connection

## SURVEY RESULTS

## Map

Swipe #	Location/Description Results in dpm/100cm <sup>2</sup>	Removable		Direct	
		Alpha	Beta	Alpha	Beta
1	Cap	120	1200	157	1428
2	Cap	120	1200	157	1428
3	Hose gasket	120	1200	157	1428
4	E/S hose	120	1200	157	1428
5	edge	120	1200	157	1428
NA	NA	NA	NA	NA	NA
✓	✓	✓	✓	✓	✓
NA	NA	NA	NA	NA	NA



**Date Reviewed:** 10-29-02

## RS Supervision:

J. HELMS

Print Name \_\_\_\_\_

19/11/20

**Signature**

## Standard Air Sample Analysis Form

**COPY**

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Removal of Filter Equipment RWP#: 02-883-009  
 Isotope: Pu Inhalation Class: W Filter Media: 47mm

Sample ID #	200273	2	3
Location	Outside	N/A	N/A
Sample Model / Serial #	Low Vol. / #9998	N/A	N/A
Sampler Calibration Due Date	Prior to Use / Weekly	N/A	N/A
Date / Time On	10/24/02 15:10	N/A	N/A
Date / Time Off	10/24/02 15:24	N/A	N/A
Total Run Time (min)	14	N/A	N/A
Average Flow Rate (lpm or cfm)	3	N/A	N/A
m3/min = (lpm x .001 or cfm x .0283)	0.0849	N/A	N/A
Volume = (m3/min x Time)	1.19	N/A	N/A

## FIRST COUNT ANALYSIS DATA:

Date	10/24/02	N/A	N/A
Time (t3)	1545	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1156	N/A	N/A
Instrument Calibration Due Date	1/13/03	N/A	N/A
Total Count	2410	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	241	N/A	N/A
Background Count Rate (cpm)	0.1	N/A	N/A
Net Count Rate (cpm)	240.9	N/A	N/A
Net Count Rate (cpm)	722.7		

## SECOND COUNT ANALYSIS DATA:

Date	10/28/02	N/A	N/A
Time (t4)	0730	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1196	N/A	N/A
Instrument Calibration Due Date	1/13/02	N/A	N/A
Total Count	5	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	0.5	N/A	N/A
Background Count Rate (cpm)	0.4	N/A	N/A
Net Count Rate (cpm)	0.1	N/A	N/A
Net Count Rate (cpm)	0.3		

(with Koval)

(if C2 ≥ C1)

(Field Screen)

DAC =  $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DACREF)}$

DAC =  $\frac{C2}{(V)(CF)(DACREF)}$

DAC =  $\frac{C1}{(V)(CF)(DACREF)}$

(low volume)

(CAM/SAAM)

(FAH)

(lapel)

CFM = lpm x 0.0353

m3/min = CFM x 0.0283

CF=0.7

CF=1.0

CF=0.7

CF=1.0 or 0.7

m3/min = lpm x 0.001

lpm = CFM/0.0353

	1st Count	2nd Count	1st Count	2nd Count	1st Count	2nd Count
Decay Time (t4-t3) in Hours	N/A	772	N/A		N/A	
DACREF	4.8		N/A		N/A	
Correction Factor (CF)	0.7		N/A		N/A	
KOVAL Factor (K)	N/A				N/A	
Calculated DAC:	180.96	0.08	N/A	N/A	N/A	N/A
RCT Printed Name	B. Jestes		N/A		N/A	
RCT Signature	<i>B. Jestes</i>		N/A		N/A	
					N/A	

Approved by:

RS Supervision

J. Helms

Print Name

Signature

1 / 10-29-02

Date

## Standard Air Sample Analysis Form

**COPY**

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Piping & hose removal RWP#: 02-883-009Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-74		
Location	Norh side of bldg.		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/28/02 10:25		
Date / Time Off	10/28/02 11:15		
Total Run Time (min)	50		
Average Flow Rate (lpm or cfm)	3 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V = m3/min x time	4.25		

## FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/28/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	3348		
Count Duration (min)	10		
Gross Count Rate (cpm)	334.8		
Background Count Rate (cpm)	0.4		
Net Count Rate (cpm)	334.4		
Net Activity (C1) in dpm	1003.2		

## SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	11/1/02-10:00	N/A
Instrument Model / Serial #	N/A	Sac 4 / 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.3	N/A
Net Count Rate (cpm)	N/A	0.1	N/A
Net Activity (C2) in dpm	N/A	0.3	N/A

(with Koval)

$$\text{DAC} = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(\text{DACREF})}$$

(if C2 &gt; C1)

$$\text{DAC} = \frac{C2}{(V)(CF)(\text{DACREF})}$$

(Field Screen)

$$\text{DAC} = \frac{C1}{(V)(CF)(\text{DACREF})}$$

(low volume)

CF=0.7

(CAM/SAAM)

CF=1.0

(FAH)

CF=0.7

(lapel)

CF=1.0 or 0.7

lpm = CFM/0.0353

CFM = lpm x 0.0353

m3/min = CFM x 0.0283

m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	59.40	0.018	N/A
RCT Printed Name	L. Severtson	L. Severtson	N/A
RCT Signature	<i>L. Severtson</i>	<i>L. Severtson</i>	N/A
			N/A

Approved by:  
RS Supervision*J. Helms*

Print Name

*L. Severtson*

Signature

111-4-02

Date

## Standard Air Sample Analysis Form

**COPY**

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of HX east bank RWP#: 02-883-009Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-76 77-M		
Location	Top floor		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/29/02 13:30		
Date / Time Off	10/29/02 14:00		
Total Run Time (min)	30		
Average Flow Rate (lpm or cfm)	3.5 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V = m3/min x time	2.55		

## FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/29/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	443		
Count Duration (min)	10		
Gross Count Rate (cpm)	44.3		
Background Count Rate (cpm)	0.6		
Net Count Rate (cpm)	43.7		
Net Activity (C1) in dpm	131.1		

## SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	10/30/02-13:30	N/A
Instrument Model / Serial #	N/A	Sac 4 / 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.1	N/A
Net Count Rate (cpm)	N/A	0.3	N/A
Net Activity (C2) in dpm	N/A	0.9	N/A

(with Koval)

$$DAC = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DACREF)}$$

(if C2 &gt; C1)

$$DAC = \frac{C2}{(V)(CF)(DACREF)}$$

(Field Screen)

$$DAC = \frac{C1}{(V)(CF)(DACREF)}$$

(low volume)

CF=0.7

(CAM/SAAM)

CF=1.0

(FAH)

CF=0.7

(lapel)

CF=1.0 or 0.7

lpm = CFM/0.0353

CFM = lpm x 0.0353

m3/min = CFM x 0.0283

m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	24	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	12.80	0.088	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	<i>L. Severtson</i>	<i>L. Severtson</i>	N/A
			N/A

Approved by:

RS Supervision

*J. Helms*

1

*J. Helms*

1

11-4-02

Print Name

Signature

Date

**SURVEY UNIT 910-B-001**  
**RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: B910 (Exterior)**



910-B-001  
PDS Data Summary

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	30	30		30	30
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	0.0	dpm/100 cm <sup>2</sup>	MIN	0.0	dpm/100 cm <sup>2</sup>
MAX	82.7	dpm/100 cm <sup>2</sup>	MAX	1.5	dpm/100 cm <sup>2</sup>
MEAN	36.5	dpm/100 cm <sup>2</sup>	MEAN	0.1	dpm/100 cm <sup>2</sup>
STD DEV	25.1	dpm/100 cm <sup>2</sup>	STD DEV	0.4	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>	TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

**SURVEY UNIT 910-B-001  
TSA - DATA SUMMARY**

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	4	6	10	13	15
Serial #:	2344	3125	1261	1513	1665	1366
Cal Due Date:	1/17/03	4/21/03	4/5/03	2/1/03	3/3/03	4/30/03
Analysis Date:	11/5/02	11/5/02	11/5/02	11/6/02	11/6/02	11/7/02
Alpha Eff. (c/d):	0.220	0.213	0.210	0.207	0.213	0.194
Alpha Bkgd (cpm)	0.7	2.0	0.0	2.0	3.0	1.3
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1,2</sup>
1	13	6	28.2	4.7	22.1	6.1
2	6	20	95.2	4	19.0	73.2
3	6	22	104.8	5.3	25.2	82.7
4	13	19.7	92.5	4.7	22.1	70.4
5	13	8.7	40.8	4.7	22.1	18.8
6	15	6	30.9	6.7	34.5	8.9
7	15	5.3	27.3	6	30.9	5.3
8	15	4.7	24.2	4	20.6	2.2
9	13	12	56.3	3.3	15.5	34.3
10	13	16.7	78.4	4	18.8	56.4
11	13	17	79.8	4	18.8	57.8
12	1	18.7	85.0	4	18.2	63.0
13	1	20	90.9	6	27.3	68.9
14	4	11	51.6	4	18.8	29.6
15	13	8	37.6	6	28.2	15.5
16	1	11	50.0	4.7	21.4	28.0
17	1	12.7	57.7	7.3	33.2	35.7
18	1	17.3	78.6	6.7	30.5	56.6
19	6	10	47.6	3.7	17.6	25.6
20	6	9.3	44.3	4	19.0	22.2
21	6	7.3	34.8	4.7	22.4	12.7
22	13	18	84.5	2	9.4	62.5
23	13	4.7	22.1	3.3	15.5	0.0
24	13	7.3	34.3	4	18.8	12.2
25	13	8.7	40.8	3.3	15.5	18.8
26	13	18	84.5	2.7	12.7	62.5
27	13	13.3	62.4	5.3	24.9	40.4
28	13	13.3	62.4	4	18.8	40.4
29	13	19.3	90.6	4.7	22.1	68.6
30	13	8	37.6	8	37.6	15.5

1 - Average LAB used to subtract from Gross Sample Activity

2 - The initial Sample Net Activity for locations 4 and 11 was 101.8 and 108.0 dpm/100cm<sup>2</sup>, respectively.  
These locations were re-surveyed after a decay period. Re-survey results are reported.

22.0	Sample LAB Average
MIN	0.0
MAX	82.7
MEAN	36.5
SD	25.1
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

27 QC	10	7.3	35.3	3.7	13.0	15.9
25 QC	10	19.3	93.2	5.3	25.6	73.9

1 - Average QC LAB used to subtract from Gross Sample Activity

19.3	QC LAB Average
MIN	15.9
MAX	73.9
MEAN	44.9
Transuranic DCGL <sub>w</sub>	100

**SURVEY UNIT 910-B-001  
RSC - DATA SUMMARY**

<b>Manufacturer:</b>	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4
<b>Instrument ID#:</b>	19	20
<b>Serial #:</b>	959	853
<b>Cal Due Date:</b>	1/18/03	2/28/03
<b>Analysis Date:</b>	11/8/02	11/8/02
<b>Alpha Eff. (c/d):</b>	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.0	0.0
<b>Sample Time (min)</b>	2	2
<b>Bkgd Time (min)</b>	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	19	0	0.0
2	20	0	0.0
3	19	0	0.0
4	20	1	1.5
5	19	0	0.0
6	20	1	1.5
7	19	0	0.0
8	20	0	0.0
9	19	0	0.0
10	20	0	0.0
11	19	0	0.0
12	20	0	0.0
13	19	0	0.0
14	20	0	0.0
15	19	0	0.0
16	20	0	0.0
17	19	0	0.0
18	20	0	0.0
19	19	0	0.0
20	20	0	0.0
21	19	0	0.0
22	20	0	0.0
23	19	0	0.0
24	20	0	0.0
25	19	0	0.0
26	20	0	0.0
27	19	0	0.0
28	20	0	0.0
29	19	0	0.0
30	20	0	0.0
		MIN	0.0
		MAX	1.5
		MEAN	0.1
		SD	0.4
		Transuranic DCGL <sub>w</sub>	20

# PRE-DEMOLITION SURVEY FOR B910

Survey Area: 2

Survey Unit: 910-B-001

Classification: 2

Building: 910

Survey Unit Description: Exterior & Pads

Total Area: 1695 sq. m.

Total Roof Area: 432 sq. m.

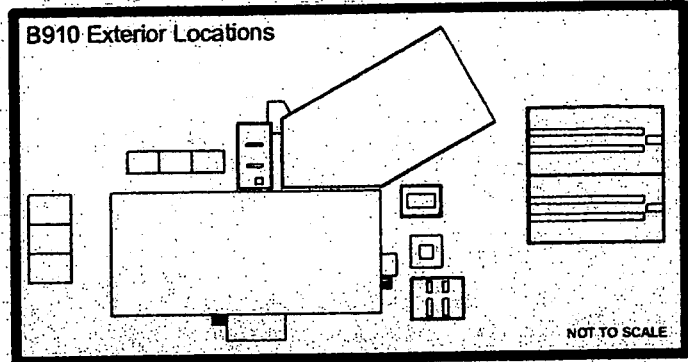
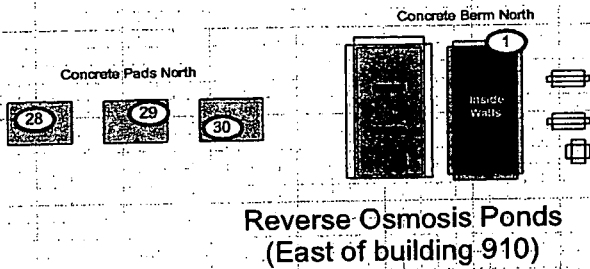
Grid Spacing for Survey Points: 11m. X 11m.

Total Floor Area: 529 sq. m.

PAGE 1 OF 1

## B910 Exterior

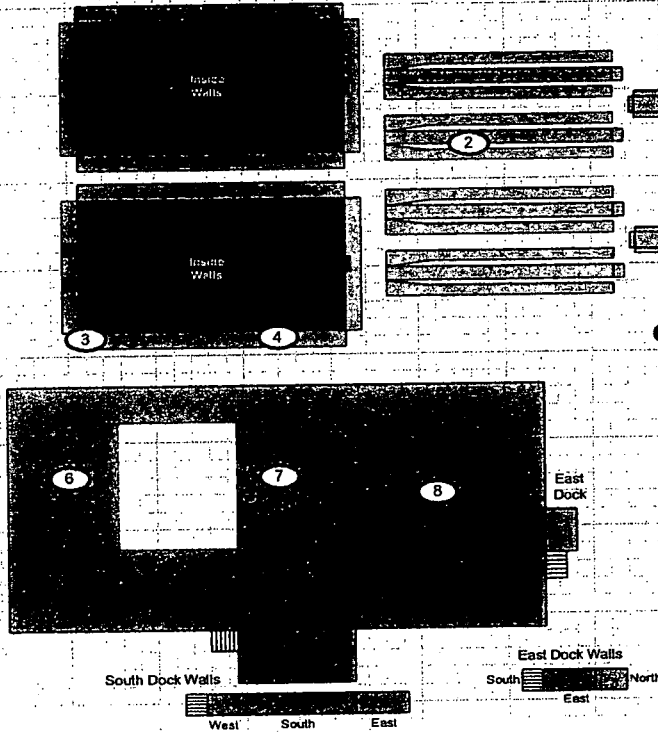
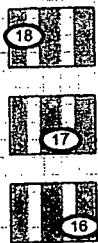
### B910 Exterior Locations



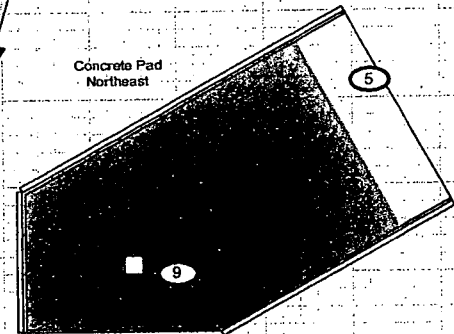
STARTING POINT  
FOR SQUARE  
SAMPLING GRID  
(X54, Y41)

Decon Emergency Pad

Concrete Pads West



Concrete Pad  
Northeast



Concrete Berm East (North side)



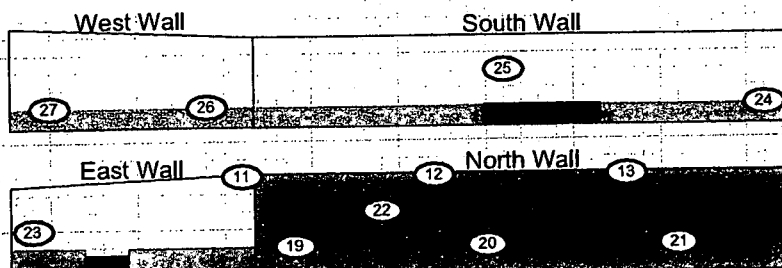
Hatch Door Pad East



Concrete Berm East (South Side)



## Exterior Walls

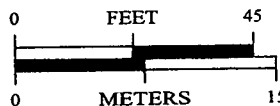


Scan Area

## SURVEY MAP LEGEND

- Smear & TSA Location
  - Smear, TSA & Sample Location
  - Open/Inaccessible Area
  - Area in Another Survey Unit
- DAP 11/19/02

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## Scan Survey Information

Survey Instrument ID #(s) & RCT ID #(s):  
2, 3, 4, 5, 7, 11, 15, 16, 17, 18

1 inch = 36 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**

THE ART OF TECHNOLOGY



MAP ID: 03-0046/B910-EX-SC

Nov 14, 2002

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# ATTACHMENT C

## Chemical Data Summaries and Sample Maps

### Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result (ug/100 cm <sup>2</sup> )
<b>Building 910</b>				
910-11122002-315-101	101	104	Top of Nitric Acid pipe	< 0.1
910-11122002-315-102	102	103	Top of MCC9A electrical box	< 0.1
910-11122002-315-103	103	West	Top of LDIC-2 electrical panel	< 0.1
910-11122002-315-104	104	West	Edge of white angle iron brace at ceiling	< 0.1
910-11122002-315-105	105	West	Top of Unit 2, Roots Compressor	< 0.1
910-11122002-315-106	106	West	Top of angle iron floor brace	< 0.1
910-11122002-315-107	107	West	Top of Evaporator Feed pipe	< 0.1
910-11122002-315-108	108	Basement	Top of green brace	< 0.1
910-11122002-315-109	109	Basement	Top of gray brace	< 0.1
910-11122002-315-110	110	Basement	Top of gray, concrete pad	< 0.1
910-11122002-315-111	111	Basement	I-beam brace on concrete pad	< 0.1
910-11122002-315-112	112	Basement	Top of green angle brace	< 0.1
910-11122002-315-113	113	Basement	Top of Distilled Water pipe	< 0.1
910-11122002-315-114	114	Basement	Top of green I-beam brace	< 0.1
910-11122002-315-115	115	Concrete Berm, East	Bottom of overflow basin, east side	< 0.1
910-11122002-315-116	116	Concrete Pad, NE	Edge of overflow drain	< 0.1
910-11122002-315-117	117	Concrete Pad, North	On concrete pad at MV9013-3	< 0.1
910-11122002-315-118	118	Concrete Pad, North	Base of vertical I-beam support	< 0.1
910-11122002-315-119	119	Concrete Pad, West	On concrete	< 0.1
910-11122002-315-120	120	Concrete Pad, West	On concrete	< 0.1

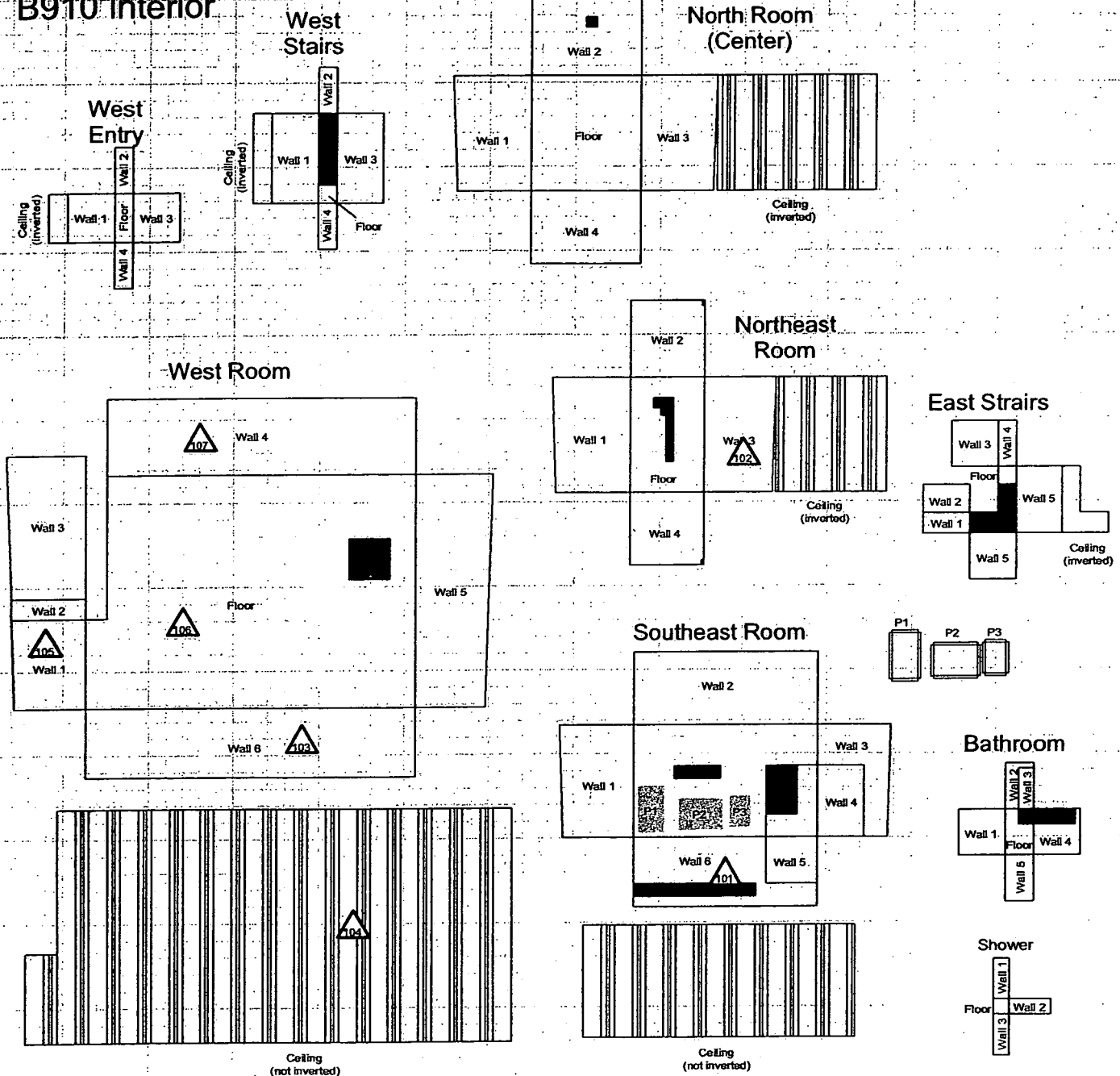
# CHEMICAL SAMPLE MAP

## Beryllium

### Building: 910 Interior Main Level

PAGE 1 OF 2

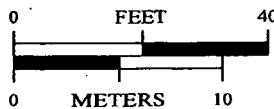
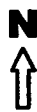
#### B910 Interior



#### SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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1 inch = 30 feet 1 grid sq. = 1 sq. m.

- Open/Inaccessible Area
- Area in Another Survey Unit

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**  
THE ART OF TECHNOLOGY



MAP ID: 03-0046/B910-4N1-BE

Nov. 12, 2002

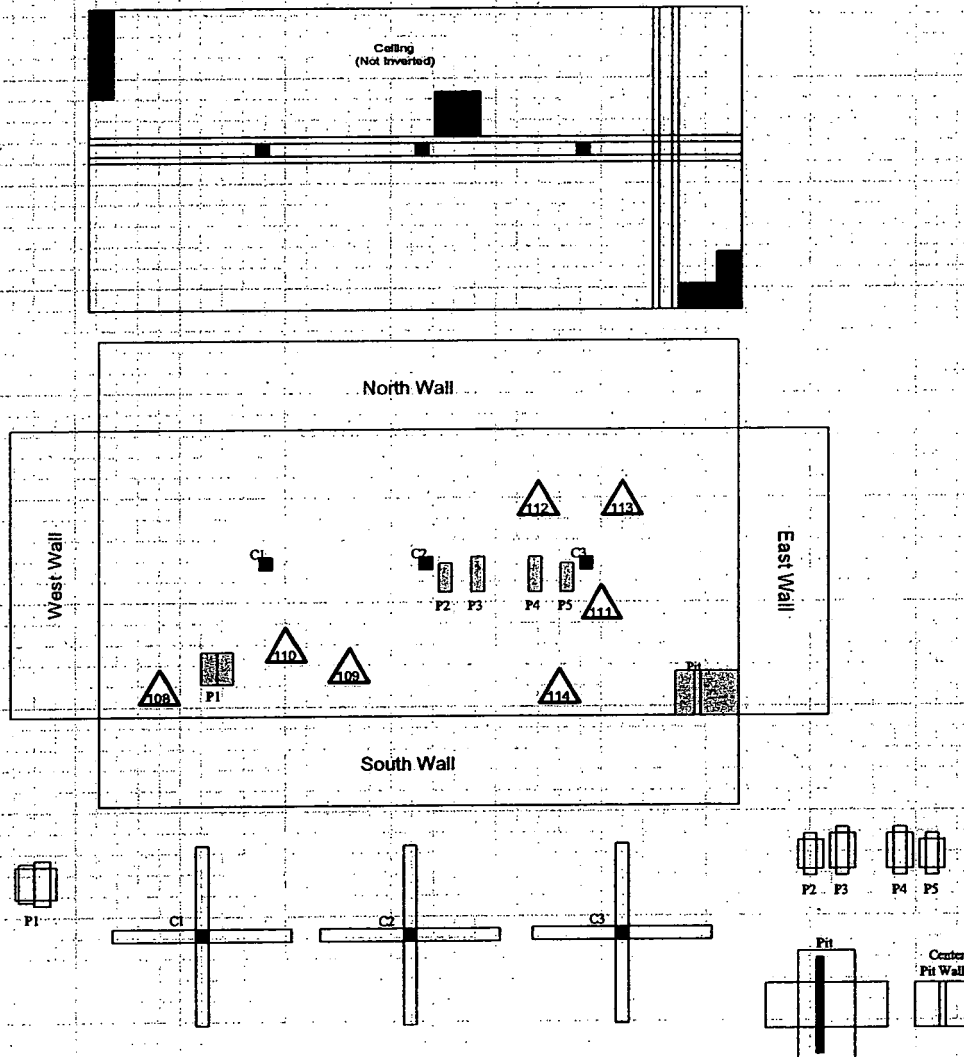
# CHEMICAL SAMPLE MAP

## Beryllium

### Building: 910 Interior Basement

PAGE 2 OF 2

## B910 Basement

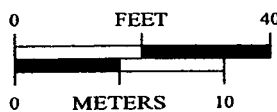


### SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit



1 inch = 30 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**  
THE ART OF TECHNOLOGY



MAP ID: 03-0046/B910-IN2-BE

Nov. 12, 2002

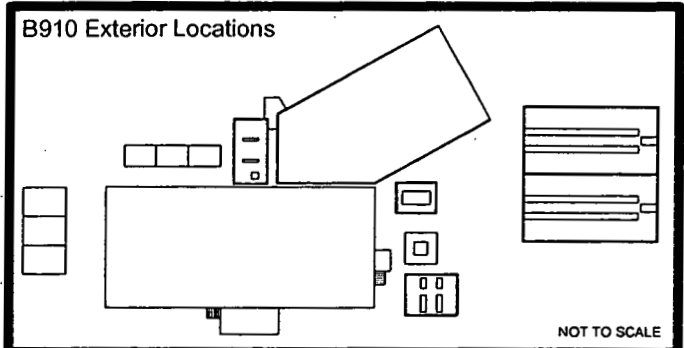
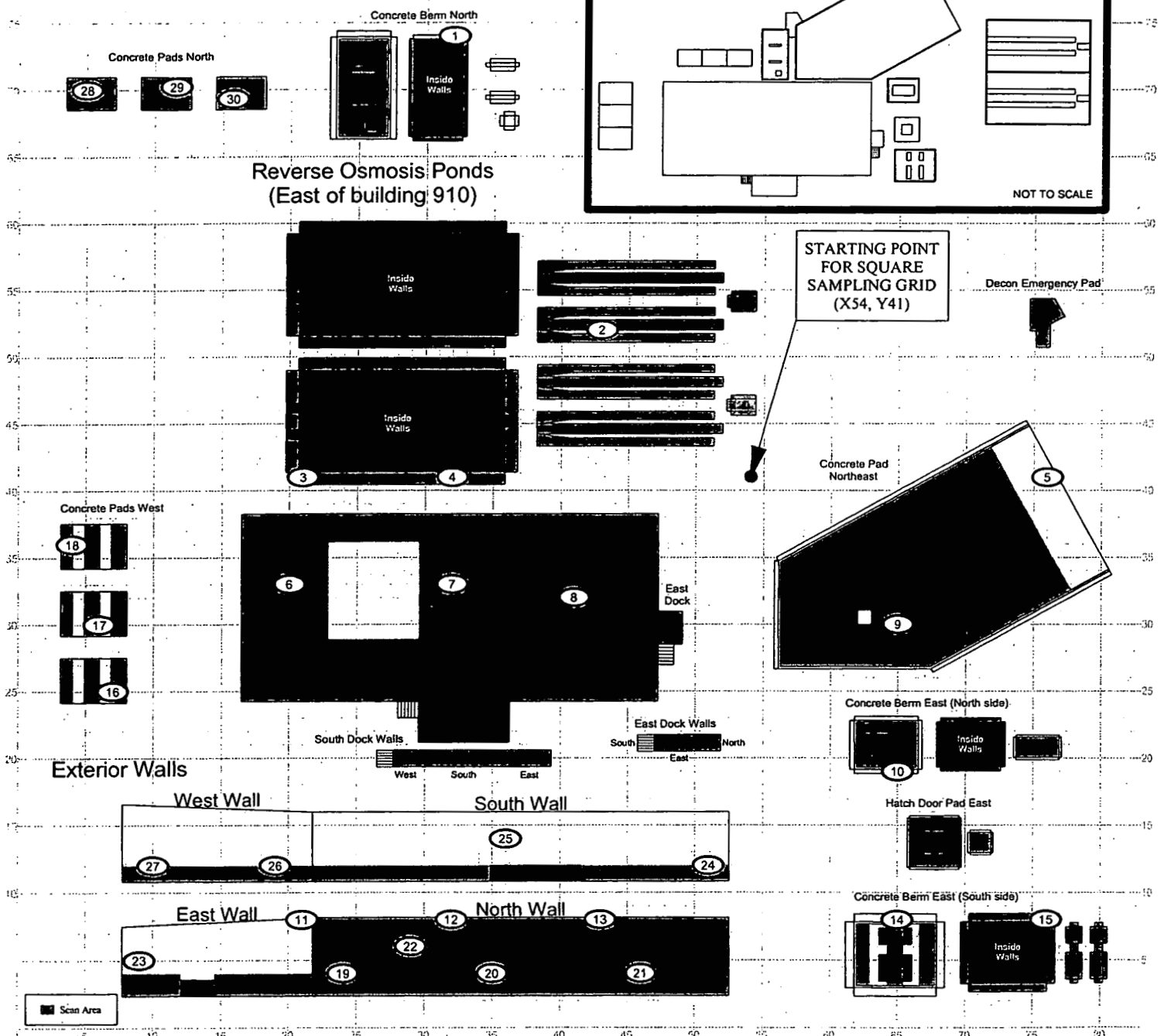


# PRE-DEMOLITION SURVEY FOR B910

Survey Area: 2      Survey Unit: 910-B-001      Classification: 2  
 Building: 910  
 Survey Unit Description: Exterior & Pads  
 Total Area: 1695 sq. m.      Total Roof Area: 432 sq. m.  
 Grid Spacing for Survey Points: 11m. X 11m.      Total Floor Area: 529 sq. m.

PAGE 1 OF 1

## B910 Exterior



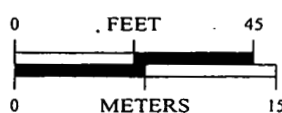
### SURVEY MAP LEGEND

- Smear & TSA Location
- ◆ Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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#### Scan Survey Information

Survey Instrument ID #(s) & RCT ID #(s):  
 2, 3, 4, 5, 7, 11, 15, 16, 17, 18



1 inch = 36 feet    1 grid sq. = 1 sq. m.

U.S. Department of Energy  
 Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**  
 THE ART OF TECHNOLOGY



MAP ID: 03-0046/B910-EX-SC

Nov 14, 2002

77

**Asbestos Data Summary**

Sample Number	Map Survey Point Location	Room	Sample Location	Analytical Results
<b>Building 910</b>				
910-11122002-315-201	201	West	White paint on CMU, south wall	None Detected
910-11122002-315-202	202	West	White paint on CMU, west wall	None Detected
910-11122002-315-203	203	West	White paint on CMU, north wall	None Detected
910-11122002-315-204	204	West	White paint on CMU, east wall	None Detected
910-11122002-315-205	205	104	White paint on CMU, south wall	None Detected
910-11122002-315-206	206	102	White paint on CMU, east wall	None Detected
910-11122002-315-207	207	103	White paint on CMU, east wall	None Detected

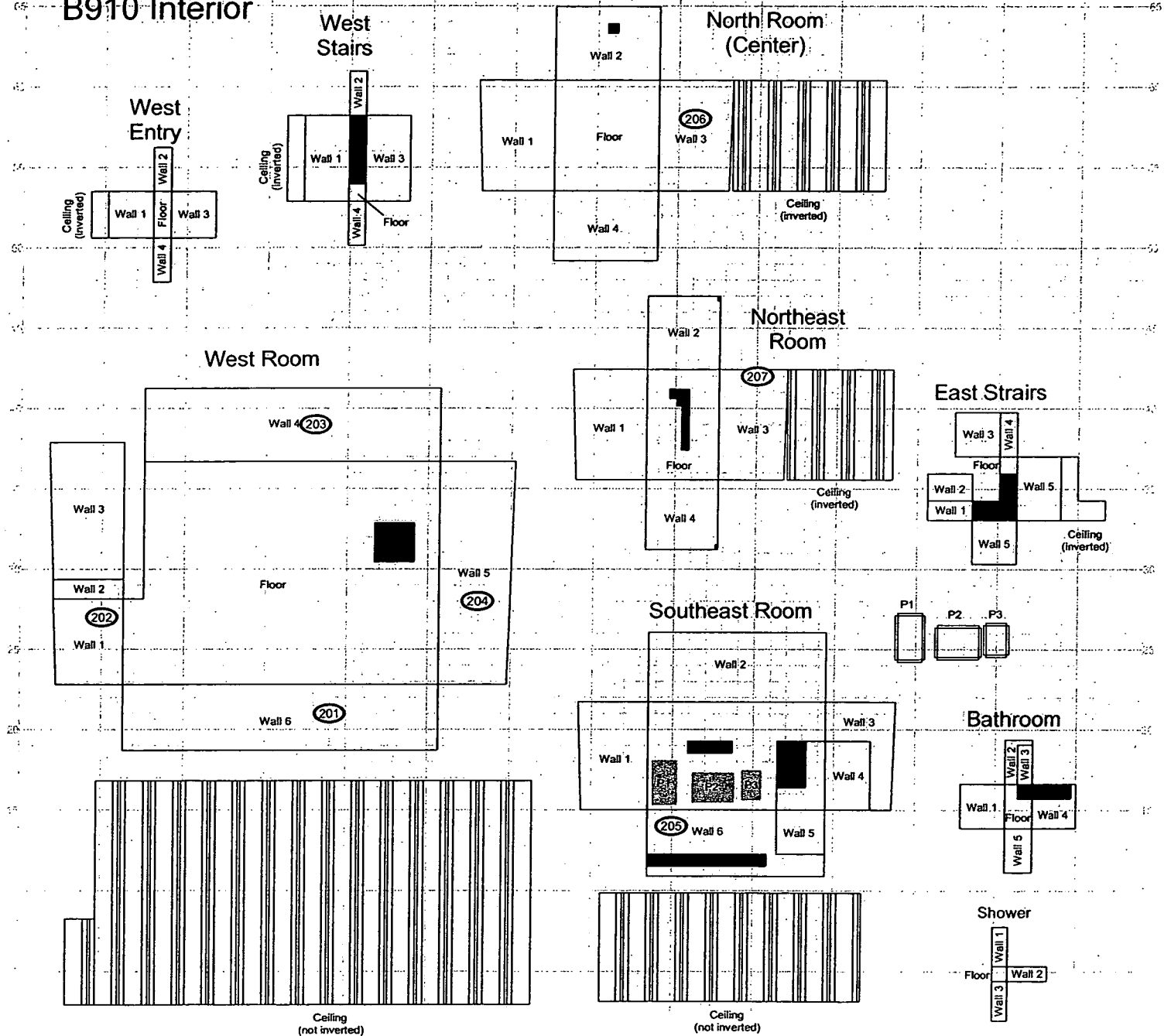
# CHEMICAL SAMPLE MAP

Asbestos

Building: 910 Interior Main Level

PAGE 1 OF 1

B910-Interior

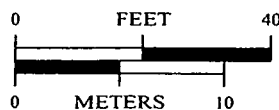


## SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit



1 inch = 30 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**

THE ART OF TECHNOLOGY



MAP ID: 03-0046/B910-IN1-ASB

Nov. 12, 2002

**RCRA TCLP Metals Data (RIN#02S0203)**

Sample Number	Sample Location	Analytical Results
02S0203 -001	Sand Filter, Basement B910	Below regulatory Limits
02S0203 -002	Sand Filter, Basement B910	Below regulatory Limits

**RCRA Toxicity Characteristic Limits (Metals)**

Analyte	Regulatory limit (mg/L)
Arsenic (D004)	5.0
Barium (D005)	100.0
Cadmium (D006)	1.0
Chromium (D007)	5.0
Lead (D008)	5.0
Mercury (D009)	0.2
Selenium (D010)	1.0
Silver (D011)	5.0

**Metals Case Narrative for  
Kaiser Hill  
SDG# 02S0203**

**Sample Analysis:**

The following samples were prepared and analyzed according to the methods referenced in the "Method/Analysis Information" section of this narrative:

<b>Sample ID</b>	<b>Client ID</b>
64569001	02S0203-001.002
64569002	02S0203-002.002
1200275879	Method Blank (MB) ICP-190948/190947
1200275883	Laboratory Control Sample (LCS)
1200275881	15128-001L (63916001) Serial Dilution (SD)
1200275880	15128-001D (63916001) Sample Duplicate (DUP)
1200275882	15128-001S (63916001) Matrix Spike (MS)
1200275899	Method Blank (MB) ICP-MS-190978/190977
1200275903	Laboratory Control Sample (LCS)
1200275901	02S0203-001.002L (64569001) Serial Dilution (SD)
1200275900	02S0203-001.002D (64569001) Sample Duplicate (DUP)
1200275902	02S0203-001.002S (64569001) Matrix Spike (MS)
1200277354	Method Blank (MB) CVAA-191151/191149
1200277359	Laboratory Control Sample (LCS)
1200277356	02S0203-001.002D (64569001) Sample Duplicate (DUP)
1200277358	02S0203-001.002S (64569001) Matrix Spike (MS)

**Method Analysis**

<b>Analytical Batch #:</b>	190948, 190978, 191151
<b>Prep Batch #:</b>	190947, 190977, 191149
<b>Standard Operating Procedure:</b>	GL-MA-E-013 REV.6, GL-MA-E-014 REV.6, GL-MA-E-010 REV.10
<b>Analytical Method:</b>	SW846 6010B, SW846 6020, SW846 7471A
<b>Prep Method:</b>	SW846 3050B, SW846 3050B, SW846 7471A

**System Configuration**

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Meinhardt nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

A Perkin Elmer Elan 6100E inductively coupled plasma mass spectrometer (ICP-MS) was employed to analyze the ICP-MS samples. The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, and tantalum were utilized to cover the mass spectrum. Operating conditions are set at 1400W power and combined argon pressures of 360+/-7 kPa for the plasma and auxiliary gases, and 0.85 L/min carrier gas flow, and an initial lens voltage of 5.2.

Mercury analysis was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-400) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 254 nm. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 5 L/min.

**Sample Preparation**

All samples were prepared in accordance with the referenced SW846 procedures.

**Calibration Information:****Initial Calibration**

Instrument calibrations are conducted using method and instrument manufacturer's specifications. All initial calibration requirements have been met for this analysis.

**CRDL Standards**

All CRDL standard elements met the referenced advisory control limits.

**ICSA/ICSAB Requirements**

All interference checks (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

**Continuing Calibration Blanks (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this SDG met the established acceptance criteria.

**Continuing Calibration Verification (CCV) Requirements**

All continuing calibration verification (CCV) standards bracketing sample analyses associated with this SDG met the recovery acceptance criteria.

**Method Blank Acceptance**

All preparation blanks analyzed with this SDG met the required detection limits (RDL).

**LCS Recovery Statement**

The laboratory control sample (LCS) met the established acceptance criteria for all elements

**QC Sample Designation**

Sample 15128-001 (63916001) from another SDG was designated as the quality control sample for the ICP batch. Sample 02S0203-001.002 (64569001) from SDG 63916 was designated as the quality control sample for the ICPMS and CVAA batches. The batches included a matrix spike (MS) and a sample spike duplicate (DUP). The ICP and ICP-MS batches included a serial dilution (SD) analysis, as well.

**MS Recovery Statement**

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS met the recommended quality control acceptance criteria for percent recovery (75%-125%) for all applicable analytes, with the exceptions of antimony, calcium, silica, and zinc, as indicated by the "N" qualifiers.

**Duplicate RPD Statement**

The relative percent difference (RPD) obtained from the sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is 5X the required detection limit (RDL). In cases where either the sample or duplicate value is less than 5X the RDL, a control of +/-RDL is used to evaluate the DUP results. All applicable analytes in duplicate sample analyses met the RPD acceptance criteria, except aluminum and silica as indicated by the "\*" qualifiers.

**Serial Dilution Statement**

The serial dilution is used to assess interference caused by matrix suppression or enhancement. Raw element concentrations that are at least 50X the IDL for ICP and at least 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established criteria for serial dilution evaluation percent difference <10, with the exception of potassium, as indicated by the "E" qualifier.

**Technical Information:****Holding Time Specifications**

All samples in this SDG met the specified holding time requirements.

**Sample Dilutions**

Dilutions are performed to minimize matrix interference resulting from elevated mineral element concentrations and/or to bring over range target analyte concentrations into the linear calibration range of the instruments. All samples were diluted the standard 2x for ICP and ICPMS analysis. The LCS was diluted the standard 5x for all analyses. No other dilutions were required.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports (NCR) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR's were generated for this SDG.

**Additional Comments**

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis and to list any report documents generated as a result of sample analysis or review.

Due to limitations of the software on the ICPMS, names such as CCV and CCB do not appear on the raw data. These instrument quality control samples must be named "QC standard x" for sequencing and check table purposes. A chart correlating the "QC standard x" to the accepted names for them has been provided in the Miscellaneous Data section of this package.

**Review/Validation:**

GEL requires all analytical data to be verified by a qualified data validator.

The following data validator verified the data presented in this SDG:

Reviewer: ALLISON E.

8/14/02

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CASIS		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				COC: 02S0203#002		Page 1 of 1	
RFETS		7/29/02				☆ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
Sampler(s) <i>R. By / S. K...</i>		(time/date)		Contact/Requester NIELSEN, SKIP / FRANCIS, MATT		Telephone No. 4289 / 2358			
RIN 02S0203				Sampling Origin BLDG. 910 SAND FILTERS		Purchase Order/Charge Code EFD56501			
Project Title BLDG. 910 SAND FILTERS				Logbook No.		Ice Chest No.		Temp.	
To (Lab) General Engineering				Method of Shipment		Bill of Lading/Air Bill No. 6192 8528 5/81			
Protocol CAS-SOP.003 Rev 3				Related COC (if any) 02S0203#001		PRE			
POSSIBLE SAMPLE HAZARDS/REMARKS						SCREENING REQUIRED		SPECIAL INSTRUCTIONS Hold Time	
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES NO Are other known hazardous substances present? YES NO .. ..						<input type="checkbox"/>			
Bottle No.	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/(Parameter List)			Preservative; Packing
02S0203 -001.001	64568%	OBJECT	7/29/02 0825	BLDG. 910 SAND FILTERS	125-G G	ASP-A-004 (Americium, Plutonium, Uranium) [14dF] (AM241; PU239240; U233234; U235; U238)			None; None
02S0203 -001.002	64569%	OBJECT	↓	BLDG. 910 SAND FILTERS	250-G G	MET-A-023 (METALS 6010/6010B) [14dF] (See Item 1)			None; 4 degrees C
	64570%			BLDG. 910 SAND FILTERS	125-G G	MET-A-031 (Metals (TCLP)) [14dF] (See Item 2)			None; 4 degrees C
02S0203 -002.001	64568%	OBJECT	0830	BLDG. 910 SAND FILTERS	125-G G	ASP-A-004 (Americium, Plutonium, Uranium) [14dF] (AM241; PU239240; U233234; U235; U238)			None; None
02S0203 -002.002	64569%	OBJECT	↓	BLDG. 910 SAND FILTERS	250-G G	MET-A-023 (METALS 6010/6010B) [14dF] (See Item 1)			None; 4 degrees C
	64570%			BLDG. 910 SAND FILTERS	250-G G	MET-A-031 (Metals (TCLP)) [14dF] (See Item 2)			None; 4 degrees C
Item 1 MET-A-023: Aluminum; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Calcium; Chromium; Cobalt; Copper; Iron; Lead; Lithium; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Potassium; Selenium; Silica; Silver; Sodium; Strontium; Thallium; Tin; Titanium; Uranium; Vanadium; Zinc Item 2 MET-A-031: Arsenic; Barium; Cadmium; Chromium; Lead; Mercury; Selenium; Silver									
Relinquished By:		Date/Time	Received By:	Date/Time	Relinquished By:		Date/Time	Received By:	Date/Time
<i>[Signature]</i>		7/31/02 0750	<i>[Signature]</i>	7/31/02 0750	<i>[Signature]</i>		7/31/02 1400	<i>[Signature]</i>	7/31/02 1400
Relinquished By:		Date/Time	Received By:	Date/Time	Relinquished By:		Date/Time	Received By:	Date/Time
<i>[Signature]</i>		7/31/02 1500	<i>[Signature]</i>		<i>[Signature]</i>				
Relinquished By:		Date/Time	Received By:	Date/Time	Relinquished By:		Date/Time	Received By:	Date/Time
<i>[Signature]</i>			<i>[Signature]</i>		<i>[Signature]</i>				
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)				Disposed By		Date/Time COC printed: 07/29/02 07:23 (Version:coc_r19.rpt)	

RIN#02S0203



TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 02S0203A

Method Type: SW846

Sample ID: 64570001

Client ID: 02S0203-001002

Contract: KHCO00100

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: TCLP

Date Received: 8/1/2002

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-38-2	Arsenic	0.040	mg/L	U		P	0.040	TJA61 Trace ICP2	80602
7440-39-3	Barium	0.060	mg/L	B		P	0.002	TJA61 Trace ICP2	80602
7440-43-9	Cadmium	0.004	mg/L	B		P	0.002	TJA61 Trace ICP2	80602
7440-47-3	Chromium	0.025	mg/L	B		P	0.005	TJA61 Trace ICP2	80602
7439-92-1	Lead	0.016	mg/L	B		P	0.012	TJA61 Trace ICP2	80602
7439-97-6	Mercury	0.001	mg/L	B		AV	0.0004	PE CVAA2	080602W1Hg
7782-49-2	Selenium	0.027	mg/L	U		P	0.027	TJA61 Trace ICP2	80602
7440-22-4	Silver	0.012	mg/L	U		P	0.012	TJA61 Trace ICP2	80602

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

ALL 8/12/02

SW-846 9

General Engineering Laboratories

RIN#02S0203

TOTAL METALS

-1-

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 02S0203A

Method Type: SW846

Sample ID: 64570002

Client ID: 02S0203-002002

Contract: KHCO00100

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: TCLP

Date Received: 8/1/2002

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-38-2	Arsenic	0.040	mg/L	U		P	0.040	TJA61 Trace ICP2	80602
7440-39-3	Barium	0.051	mg/L	B		P	0.002	TJA61 Trace ICP2	80602
7440-43-9	Cadmium	0.002	mg/L	U		P	0.002	TJA61 Trace ICP2	80602
7440-47-3	Chromium	0.015	mg/L	B		P	0.005	TJA61 Trace ICP2	80602
7439-92-1	Lead	0.012	mg/L	U		P	0.012	TJA61 Trace ICP2	80602
7439-97-6	Mercury	0.001	mg/L	B		AV	0.0004	PE CVAA2	080602W1Hg
7782-49-2	Selenium	0.027	mg/L	U		P	0.027	TJA61 Trace ICP2	80602
7440-22-4	Silver	0.012	mg/L	U		P	0.012	TJA61 Trace ICP2	80602

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

46.2 8/12/02

SW-84670

**TOTAL METALS**  
- 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 02S0203

Method Type: SW846

Sample ID: 64569001

Client ID: 02S0203-001002

Contract: KHCO00100

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: SOIL

Date Received: 8/1/2002

Level: LOW

% Solids: 100.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7429-90-5	Aluminum	732	mg/kg		*	P	0.613	TJA61 Trace ICP2	80702
7440-36-0	Antimony	0.474	mg/kg	U	N	P	0.474	TJA61 Trace ICP2	80702
7440-38-2	Arsenic	1.210	mg/kg	B		P	0.394	TJA61 Trace ICP2	80702
7440-39-3	Barium	40.9	mg/kg			P	0.019	TJA61 Trace ICP2	80702
7440-41-7	Beryllium	0.206	mg/kg	B		MS	0.005	PE ICPMS3	020805
7440-42-8	Boron	0.388	mg/kg	U		P	0.388	TJA61 Trace ICP2	80702
7440-43-9	Cadmium	0.608	mg/kg	B		MS	0.006	PE ICPMS3	020805
7440-70-2	Calcium	1050	mg/kg		N	P	1.560	TJA61 Trace ICP2	80702
7440-47-3	Chromium	14.3	mg/kg			P	0.053	TJA61 Trace ICP2	80702
7440-48-4	Cobalt	1.790	mg/kg	B		P	0.058	TJA61 Trace ICP2	80702
7440-50-8	Copper	16.4	mg/kg			P	0.129	TJA61 Trace ICP2	80702
7439-89-6	Iron	2240	mg/kg			P	0.209	TJA61 Trace ICP2	80702
7439-92-1	Lead	10.2	mg/kg			P	0.123	TJA61 Trace ICP2	80702
7439-93-2	Lithium	0.818	mg/kg	B		MS	0.005	PE ICPMS3	020805
7439-95-4	Magnesium	180	mg/kg	B		P	0.509	TJA61 Trace ICP2	80702
7439-96-5	Manganese	15.8	mg/kg			P	0.036	TJA61 Trace ICP2	80702
7439-97-6	Mercury	0.009	mg/kg	B		AV	0.003	PE CVAA	080302S1Hg
7439-98-7	Molybdenum	0.531	mg/kg	B		P	0.115	TJA61 Trace ICP2	80702
7440-02-0	Nickel	3.650	mg/kg	B		P	0.083	TJA61 Trace ICP2	80702
7440-09-7	Potassium	261	mg/kg	B	E	P	2.080	TJA61 Trace ICP2	80702
7782-49-2	Selenium	0.694	mg/kg	B		P	0.264	TJA61 Trace ICP2	80702
7631-86-9	Silica	435	mg/kg		*N	P	1.500	TJA61 Trace ICP2	80902
7440-22-4	Silver	20.5	mg/kg			P	0.114	TJA61 Trace ICP2	80702
7440-23-5	Sodium	134	mg/kg	B		P	3.660	TJA61 Trace ICP2	80702
7440-24-6	Strontium	19.0	mg/kg	B		P	0.015	TJA61 Trace ICP2	80702
7440-28-0	Thallium	0.494	mg/kg	U		P	0.494	TJA61 Trace ICP2	80702
7440-31-5	Tin	0.969	mg/kg	B		P	0.191	TJA61 Trace ICP2	80702
7440-32-6	Titanium	7.610	mg/kg			P	0.024	TJA61 Trace ICP2	80702
7440-61-1	Uranium	3.190	mg/kg	U		P	3.190	TJA61 Trace ICP2	80702
7440-62-2	Vanadium	4.590	mg/kg	B		P	0.079	TJA61 Trace ICP2	80702
7440-66-6	Zinc	209	mg/kg		N	P	0.125	TJA61 Trace ICP2	80702

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

## TOTAL METALS

- 1 -

## INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 02S0203

Method Type: SW846

Sample ID: 64569002

Client ID: 02S0203-002.002

Contract: KHCO00100

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: SOIL

Date Received: 8/1/2002

Level: LOW

% Solids: 100.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7429-90-5	Aluminum	633	mg/kg		*	P	0.601	TJA61 Trace ICP2	80702
7440-36-0	Antimony	0.465	mg/kg	U	N	P	0.465	TJA61 Trace ICP2	80702
7440-38-2	Arsenic	1.640	mg/kg	B		P	0.386	TJA61 Trace ICP2	80702
7440-39-3	Barium	40.2	mg/kg			P	0.018	TJA61 Trace ICP2	80702
7440-41-7	Beryllium	0.168	mg/kg	B		MS	0.006	PE ICPMS3	020805
7440-42-8	Boron	0.381	mg/kg	U		P	0.381	TJA61 Trace ICP2	80702
7440-43-9	Cadmium	0.151	mg/kg	B		MS	0.006	PE ICPMS3	020805
7440-70-2	Calcium	819	mg/kg	B	N	P	1.530	TJA61 Trace ICP2	80702
7440-47-3	Chromium	2.880	mg/kg			P	0.052	TJA61 Trace ICP2	80702
7440-48-4	Cobalt	1.900	mg/kg	B		P	0.056	TJA61 Trace ICP2	80702
7440-50-8	Copper	10.8	mg/kg			P	0.127	TJA61 Trace ICP2	80702
7439-89-6	Iron	1570	mg/kg			P	0.204	TJA61 Trace ICP2	80702
7439-92-1	Lead	6.400	mg/kg	B		P	0.121	TJA61 Trace ICP2	80702
7439-93-2	Lithium	0.577	mg/kg	B		MS	0.006	PE ICPMS3	020805
7439-95-4	Magnesium	197	mg/kg	B		P	0.499	TJA61 Trace ICP2	80702
7439-96-5	Manganese	9.900	mg/kg			P	0.035	TJA61 Trace ICP2	80702
7439-97-6	Mercury	0.009	mg/kg	B		AV	0.003	PE CVAA	080302S1Hg
7439-98-7	Molybdenum	0.585	mg/kg	B		P	0.112	TJA61 Trace ICP2	80702
7440-02-0	Nickel	3.720	mg/kg	B		P	0.081	TJA61 Trace ICP2	80702
7440-09-7	Potassium	249	mg/kg	B	E	P	2.040	TJA61 Trace ICP2	80702
7782-49-2	Selenium	0.796	mg/kg	B		P	0.259	TJA61 Trace ICP2	80702
7631-86-9	Silica	442	mg/kg		*N	P	1.470	TJA61 Trace ICP2	80902
7440-22-4	Silver	17.2	mg/kg			P	0.112	TJA61 Trace ICP2	80702
7440-23-5	Sodium	108	mg/kg	B		P	3.590	TJA61 Trace ICP2	80702
7440-24-6	Strontium	15.9	mg/kg	B		P	0.015	TJA61 Trace ICP2	80702
7440-28-0	Thallium	0.484	mg/kg	U		P	0.484	TJA61 Trace ICP2	80702
7440-31-5	Tin	0.820	mg/kg	B		P	0.187	TJA61 Trace ICP2	80702
7440-32-6	Titanium	9.750	mg/kg			P	0.023	TJA61 Trace ICP2	80702
7440-61-1	Uranium	3.130	mg/kg	U		P	3.130	TJA61 Trace ICP2	80702
7440-62-2	Vanadium	4.960	mg/kg	B		P	0.077	TJA61 Trace ICP2	80702
7440-66-6	Zinc	24.2	mg/kg		N	P	0.123	TJA61 Trace ICP2	80702

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

# ATTACHMENT D

## Data Quality Assessment (DQA) Detail

## DATA QUALITY ASSESSMENT (DQA)

### VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically asbestos and beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed. The radiological survey assessment is provided in Table D-1, asbestos in Table D-2 and beryllium in Table D-3. A data completeness summary for all results is given in Table D-4.

All relevant Quality records supporting this report are maintained in the RISS Characterization Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for Building 910 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic DCGL<sub>w</sub> (100 dpm/100cm<sup>2</sup>) and the Uranium DCGL<sub>w</sub> (5,000 dpm/100cm<sup>2</sup>) unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against the model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

### DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable DCGL unrestricted release levels confirming Type 2 facility classification. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, survey units were properly designed and bounded, and instrument performance and calibration was verified as acceptable. All results meet the PDS unrestricted release criteria.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the facilities. On this basis, building 910 meets the unrestricted release criteria with the confidences stated herein.

**Table D-1 V&V of Radiological Results for Building 910**

V&V CRITERIA, RADIOLOGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	Local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Units 910-A-002 and 910-B-001.	statistical and biased	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Units of measure	dpm/100cm <sup>2</sup>	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys Usable results vs. unusable	>95% >95%	NA	See Table D-4 for details.
SENSITIVITY	Detection limits	TSA: ≤50 dpm/100cm <sup>2</sup> RA: ≤10 dpm/100cm <sup>2</sup>	all measures	PDS MDAs ≤ 50% DCGL <sub>w</sub>



Table E-2 V&V of Asbestos Results For Building 910

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	METHOD: EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc	
QUALITY REQUIREMENT		RIN ---->	RIN03Z0308	
		Measure	Frequency	COMMENTS
ACCURACY	Calibrations: Initial/continuing	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation.
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 7 samples	Semi-quantitative, per (microscopic) visual estimation.
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact: completed paperwork, containers w/ custody seals.
	Hold times/preservation	Qualitative	NA	N/A
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	See original Chemical Characterization Package (planning document); for field/sampling procedures (located in project file;) thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Measurement Units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	Qualitative	NA	See Table D-4, final number of samples at Certified Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

**Table D-3 V&V of Beryllium Results for Building 910**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville, Littleton, Co.	
		RIN ---->	RIN03Z0307	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i.e. classification of a Type 2 Facility confirmed; all results were below associated action levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks – lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm <sup>2</sup>	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%	NA	
SENSITIVITY	Detection limits	MDL of 0.012 ug/100cm <sup>2</sup>	all measures	

**Table D-4 Data Completeness Summary For Building 910**

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	B910 (interior)	0 biased	7 biased (interior)	No ACM present, all results were none detect	40 CFR763.86; CCR 1001-10; EPA 600/R-93/116  RIN03Z0308  All PDS asbestos results were none detect. However, ACM identified during the Group A facility RLCR will be removed prior to demolition in accordance with CDPHE Regulation 8.
Beryllium	B910 (interior and exterior)	15 biased	20 biased (14 interior/6 exterior)	No contamination found at any location	10CFR850; OSHA ID-125G  RIN03Z0307  No results above the action level (0.2 ug/100cm <sup>2</sup> ) or investigative level (0.1 ug/100cm <sup>2</sup> .)
Radiological	Survey Area 2 Survey Unit: 910-A-002 Bldg. 910 (interior)	30 α TSA (15 random/15 biased) and 30 α Smears (15 random/15 biased) 2 QC TSA  5% scan	31 α TSA (16 random/15 biased) and 31 α Smears (16 random/15 biased) 2 QC TSA  5% scan	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable.  Survey map shows 30 sample locations. An additional sample was taken under the carpet at location 12 (2 samples at this location), therefore, a total of 31 survey results (16 random & 15 biased) are reported in the Radiological Data Summary – PDS.  The sand filter tanks have been sealed and will be packaged and removed as low level radioactive waste during demolition in accordance with the PWRE process. The PWRE data can be found in Attachment B, Radiological Data Summary and Survey Maps.

**Table D-4 Data Completeness Summary For Building 910**

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area 2 Survey Unit: 910-B-001 Bldg. 910 (exterior)	30 α TSA (15 systematic/15 biased) and 30 α Smears (15 systematic/15 biased) 2 QC TSA  100% scan exterior north wall and 50% scan of remaining exterior surfaces	30 α TSA (15 systematic/15 biased) and 30 α Smears (15 systematic/15 biased) 2 QC TSA  100% scan exterior north wall and 50% scan of remaining exterior surfaces	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable.  Initial Sample Net Activity for locations 4 and 11 (101.8 dpm/100cm <sup>2</sup> and 108.0 dpm/100cm <sup>2</sup> respectively) were greater than the Transuranic DCGL <sub>w</sub> (100 dpm/100cm <sup>2</sup> ). In accordance with RSP 16.02, these locations were allowed to decay and re-surveyed. Both re-survey results were less than the Transuranic DCGL <sub>w</sub> (100 dpm/100cm <sup>2</sup> ) and are the values reported in the Radiological Data Summary – PDS. All results are below the unrestricted release levels.

<sup>A</sup> Number of asbestos samples required are an estimate only, final number of samples is at the discretion of IH.